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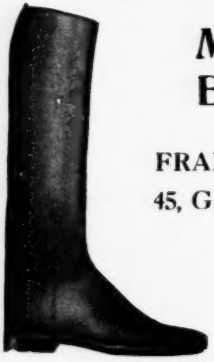

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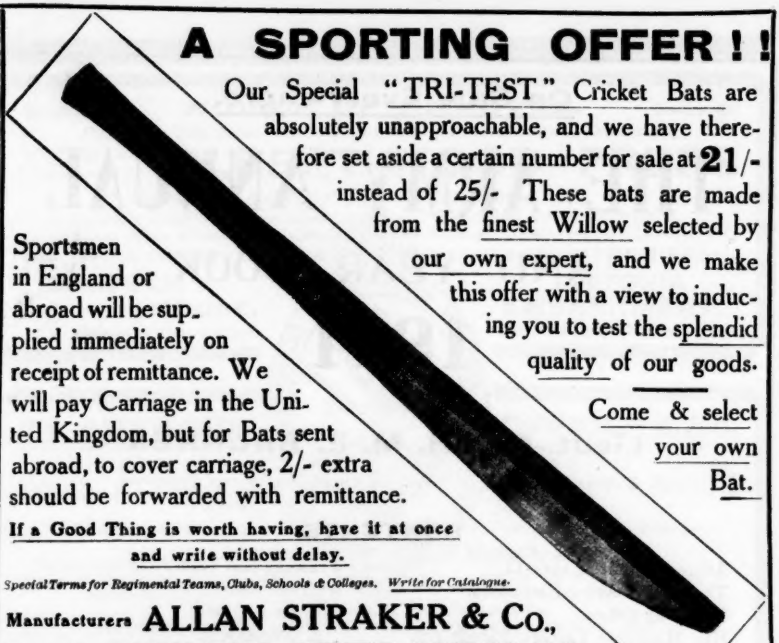

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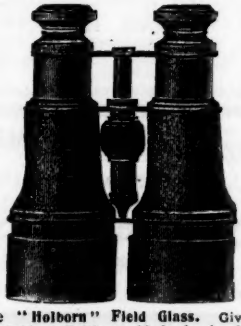

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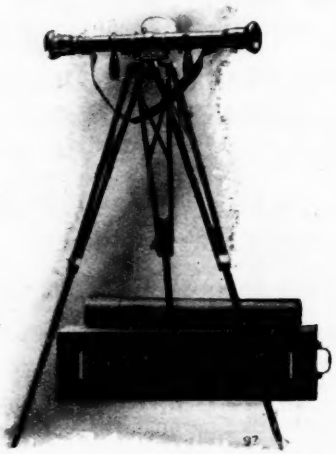

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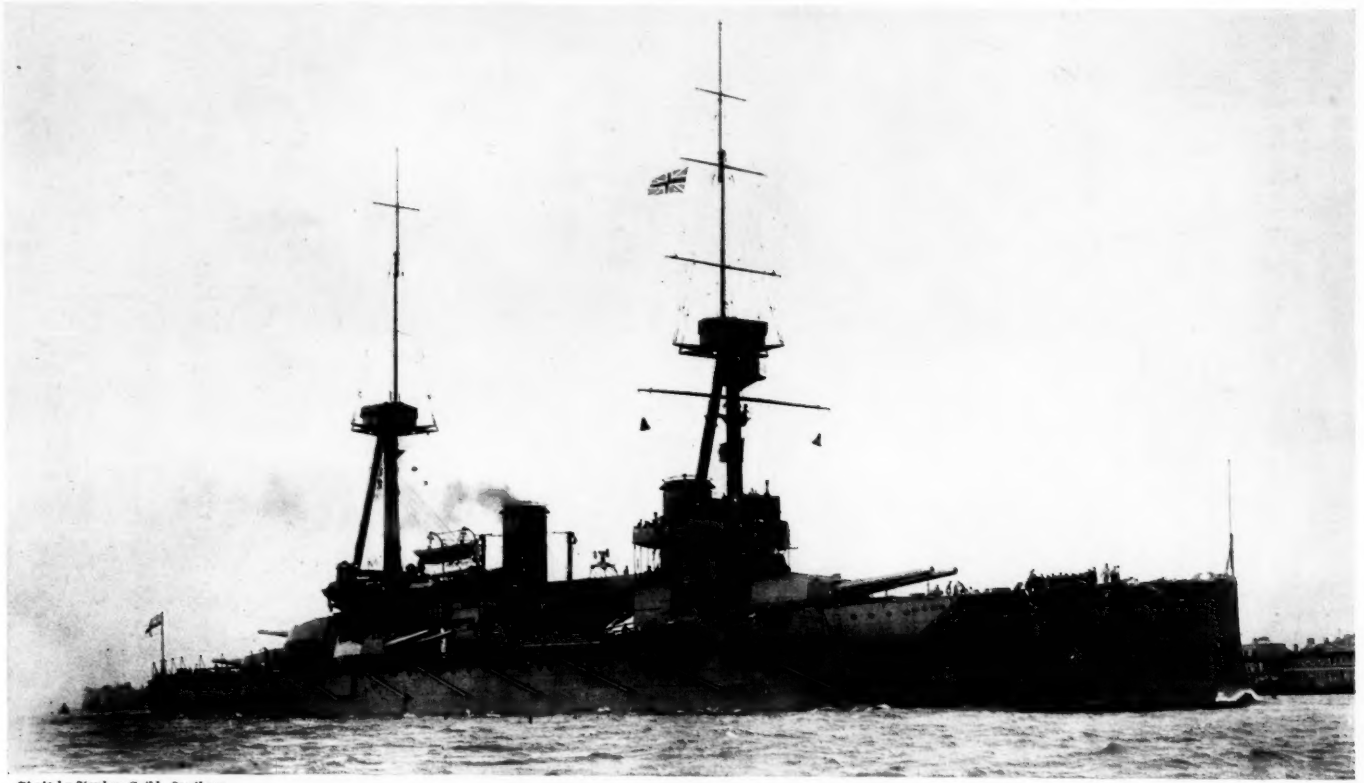


Photo by Stephen Cribb, Southsea.

The first class battleship "Neptune," flagship of Admiral Sir F. C. B. Bridgeman, G.C.B., K.C.V.O., Commander-in-Chief of the Home Fleet.

(*See page* 830)

ERRATA JUNE JOURNAL.

Owing to a Printer's error one line on page 758, of the June Journal was inserted wrongly.

The sentence commencing in line 22, of that page should have read as follows :—" particularly in regard to his responsibility—that is, they are *collectively* responsible."

Page 804, seventh line from foot of page, for (3) read (4).

Page 805, third line of footnote, for "taken" read "described."

Page 807, third line from foot of page, for " Shawai " read " Shawia."

ROYAL UNITED SERVICE INSTITUTION

JULY, 1911.

SECRETARY'S NOTES.

I. CORONATION HONOURS.

The King has been graciously pleased on the occasion of His Majesty's Coronation to bestow honours and promotions on the following officers who are members of the Council of the Institution:—

General Lord Methuen, G.C.B., G.C.V.O., C.M.G., to be Field-Marshal.

Vice-Admiral A. M. Field, F.R.S., Colonel W. A. Hill, C.B., and Colonel T. S. Cave, C.B., V.D., to be Knight Commanders of the Bath (Civil).

Major-General J. H. Bor, C.M.G., R.M.A., to be a Companion of the Bath (Military).

Colonel R. B. Colvin, C.B. (Military), to be a Companion of the Bath (Civil).

Colonel L. A. Hale to be a Knight-Bachelor.

No less a number than 105 members of the Institution received various awards and decorations.

II. OFFICERS JOINED.

The following officers joined the Institution during the month of June:—

Major A. H. D. Britton, 5th Bn. Royal Dublin Fusiliers.
Second-Lieutenant R. L. Loyd, 16th Lancers.
Second-Lieutenant J. G. Harter, Durham Light Infantry.
Captain H. L. Holme, R.G.A.
Second Lieutenant W. A. S. Rough, 4th Bn. Bedfordshire Regiment.

III. MEMBERSHIP.

During the first half of the year 1911, the number of officers who joined the Institution amounted to 155. The various branches were represented as follows:—

Regular Army	101
Royal Navy	20
Territorial Force (including Yeomanry)	16
Special Reserve	9
Indian and Colonial Volunteers	5
Royal Marines	2
Royal Naval Reserve and R.N.V.R.	2
	155

This number does not compare favourably with the first half of 1910, The Council therefore hope that Members will not relax their energies in introducing new members; a pink form is placed in each Journal with this special object.

IV. ANNUAL CLEANING.

The Building will be closed for cleaning purposes from Monday, August 21st, to Saturday, September 2nd, inclusive. The Museum will be open as usual during that period.

V. ADDITIONS TO THE MUSEUM.

(6330.) A Print in Colours, by Dubourg, from a Painting by J. H. Clark, and published by Edward Orme in 1817, of "The Field of Waterloo, as it appeared the morning after the memorable battle of 18th June, 1815."

(6331.) An Aquatint by R. Reeve, from the drawing of W. Heath of "The Battle of Waterloo, June 18th, 1815," published by R. Reeve, 1816.

(6332.) An Infantry Bugle of the 2nd King's African Rifles. This Bugle was carried at the action of Gumburru, Somaliland, on April 17th, 1903, and was there captured by the Mullah's people, the British force being practically annihilated. At the action of Jidballi, on January 11th, 1904, the Mullah was defeated by General Egerton, and the Bugle was retaken. Colonel Plunkett was the Officer in Command at Gumburru.—*Presented by Lt.-Col. E. H. Llewellyn and the officers of the 2nd King's African Rifles.*

(6333.) A Case containing 11 Medals of the native non-commissioned officers of the 2nd King's African Rifles, who were killed in action in the Somaliland Campaign, 1902-4.—*Presented by Lt.-Col. E. H. Llewellyn and the officers of the 2nd King's African Rifles.*

VI. THE INSTITUTION OF NAVAL ARCHITECTS.

The Institution of Naval Architects held their reception in the museum of the Institution on Monday, July 3rd, Between 500 and 600 guests were present. The Band of the Royal Marine Light Infantry played a programme of instrumental music, and the choir of H.M. Chapels Royal sang a series of glees.

H.M.S. *NEPTUNE.*

The new first-class battleship *Neptune*, a photograph of which forms the frontispiece, is the eighth ship of the *Dreadnought* type to be completed for the Navy. She was the only battleship provided for in the 1908-09 programme, is of an improved type to her predecessors and the only ship of her exact class, although the *Hercules* and *Colossus*, both now approaching completion, are practically her sister ships. Her dimensions are as follows: Length (between perpendiculars) 510 feet, over all, 546 feet; beam, 85 feet; displacement, 19,900 tons. Her turbine engines on trial developed 27,700 S.H.P., being 2,700 over the contract, while the speed was 21.78 knots, the contract speed being 21. Her waterline belt is believed to be 11 inches thick, tapering to 6 inches forward and 4 inches aft, with an upper belt of 8 inches, the gun positions being protected with 11-inch armour. Like the earlier ships of the *Dreadnought* type, her main armament consists of ten 50-calibre 12-inch guns, mounted in pairs in five turrets, but

these latter are arranged differently to any of her predecessors, so that she is enabled to fire the whole of her guns on the beam, while they can only fire eight. To do this her two side turrets have been placed *en échelon* amidships, which enables the guns to be trained through almost a complete circle, and to fire on either beam; the middle turret on the centre line is placed immediately forward of and higher than the after turret, over which it fires when trained aft. All the ten 12-inch guns can thus be fired on either beam, while eight are available for stern and six for bow fire. Her anti-torpedo armament consists of sixteen 4-inch Q.F. guns, and she has three 21-inch submerged torpedo tubes. A noticeable point also is the small amount of superstructure, the reduction of which is even still more marked in the new *Orion* class.

PRINCIPAL ADDITIONS TO LIBRARY DURING JUNE, 1911.

The Siege of Boston. By ALLEN FRENCH. Crown 8vo. 6s. 6d. (The Macmillan Company.) New York, 1911.

The Declaration of London. By NORMAN BENTWICH. 8vo. 5s. (Effingham Wilson.) London, 1911.

The Future Peace of the Anglo-Saxons. By Major STEWART L. MURRAY. 8vo. 6d. (Watts and Co.) London, 1905.

Russia and Reform. By BERNARD PARES. 8vo. 10s. 6d. (Archibald Constable and Co. Ltd.) London, 1907.

Moxly's Theory of the Tides. By J. F. RUTHVEN. 8vo. 5s. (Presented.) (J. D. Pober.) London, 1911.

Lexicon for Secret Correspondence. By JOHN LEARD. fc. fol. (Presented.) (R. G. Clarke.) London, 1812.

La Guerre Russo-Japonaise—Historique—Enseignements. By Lieut.-Colonel VAISSIÉRE. 8vo. 4/2. (Henri Charles-Lavauzelle.) Paris, 1911.

Les Japonais en Mandchourie. By Colonel CORDONNIER. 8vo. 4/6. (Henri Charles-Lavauzelle). Paris, 1911.

The Campaigns and History of the Royal Irish Regiment from 1684 to 1902. By Lieut.-Colonel G. Le M. GRETTON. 4to. 6/-. Illustrated. (Presented.) (William Blackwood & Sons.) Edinburgh, 1911.

Scritti editi e inediti del Generale Giovanni Cavalli. Raccotti e publicati per Ordene del Ministero della Guerra. 4 vols. Imp. 8vo. (Presented.) (G. B. Paravia.) Turin, 1910.

Sea Kings of Britain—Keppel to Nelson. By G. A. R. CALLENDER. Crown 8vo. 3/6. (Presented.) (Longmans, Green & Co.) London, 1911.

Les Espagnols au Maroc en 1909. By General de TORCY. 2nd edit. 8vo. 3/9. Illustrated. (Berger-Levrault). Paris, 1911.

Armées Modernes et Flottes Aériennes. By Chef D'ESCADRON J. CHALLEAT. 8vo. 1/3. (Berger-Levrault.) Paris, 1911.

Catalogue of Pictures, Presentation Plate, Figureheads, Models, Relics, and Trophies at the Admiralty, on board H.M. Ships, and in the Naval Establishments at Home and Abroad. Imp. 8vo. (Presented.) London, 1911.

A History of the Services of the 17th (The Leicestershire) Regiment. By Lieut.-Colonel E. A. H. WEBB. 8vo. (Presented.) (Vacher & Sons, Ltd.) London, 1911.

International Law. By F. E. SMITH, K.C., M.P. 4th edit. Revised and enlarged by J. Wylie. 8vo. 7/6. (J. M. Dent & Sons, Ltd.) London, 1911.

Big-Game Shooting in Upper Burma. By Major G. P. EVANS, I.A. 8vo. 7/6. (Longmans, Green & Co.), London, 1911.

ERRATA.

Page 844, line 17. For " Punjhad " read Punjnad.

Page 846, line 12. After " feudatory " insert " state."

Page 846, eighth line from bottom. Delete semi-colon after word " Rurki."

THE JOURNAL

OF THE

ROYAL UNITED SERVICE INSTITUTION.

VOL. LV. JULY, 1911. No. 401.

[*Authors alone are responsible for the contents of their respective Papers.*]

THE STRATEGICAL AND POLITICAL VALUE OF THE NAVIGABLE WATERWAYS OF INDIA

BY P. BRAMLEY, Esq. (Deputy Inspector-General of Police.)

On Wednesday, April 26th, 1911.

The Right Hon. Sir HENRY MORTIMER DURAND, G.C.M.G., K.C.S.I., K.C.I.E., in the Chair.

SYNOPSIS OF LECTURE.

PART I. INTRODUCTION.

THE IMPORTANCE OF THE QUESTION. GENERAL ARRANGEMENT OF THE SUBJECT.

PART II. GENERAL DESCRIPTION OF THE INDIAN EMPIRE

DEFINITION OF TERMS. FRONTIERS AND EXTENT. THREE DISTINCT REGIONS.

PART III. THE THREE GREAT RIVER SYSTEMS OF NORTHERN INDIA.

(1) THE PUNJAB SYSTEM OF RIVERS.

The River Indus. The River Jhelum. The River Chenab. The River Ravi. The River Beas. The River Sutlej. Summary of Survey of the Punjab Rivers.

(2) THE GANGETIC SYSTEM OF RIVERS.

The River Ganges. The Jumna and the Chambal. The Gumti. The Gogra. The Son. The Gandak and the Kosi. The Gangetic Estuary and Delta. Summary of Survey of the Gangetic Rivers.

(3) THE EASTERN BENGAL AND ASSAM GROUP OF RIVERS.

The River Brahmaputra. The Dibong and the Lohit. The Teesti. The Meghna. Summary of Survey of the Rivers in Eastern Bengal and Assam.

NATURAL POTENTIALITIES OF THE THREE RIVER SYSTEMS COMBINED.

PART IV. THE HISTORY OF THE RIVERS.

EARLY HISTORY.

Early Dravidian River Folk. The Aryans and Early Hindu Nations. Influence of the Rivers. Alexander's Retreat from the Punjab. Inland Communication under the Buddhist Empire. Subsequent Hindu Dynasties.

INLAND COMMUNICATION UNDER THE MOHAMMEDAN EMPIRE.

Moghul Military Roads. The Moghul "Admiralty." The Protection of the Waterways by the Moghuls.

HISTORY UNDER BRITISH RULE UP TO THE MUTINY.

Advent of the British in Northern India. General Situation in 1764. First Maharatta War, 1779-80. General Situation in 1800. Second Maharatta War. Nepal War, 1814-15. Burmah War, 1824. Improvements in Inland Communication in Upper India. Introduction of Steam Navigation. Creation of the Indian Public Water Department. Introduction of the Electric Telegraph, 1854. Introduction of Railways 1856.

THE INDIAN MUTINY.

General Situation in 1857. Important Political Centres held under control. The Moghul Forts. Lessons of Cawnpur and Futegarh. Influence of Navigable Waterways on Subsequent Operations. Strategic Value of the Irrigation Canals.

DEVELOPMENTS SINCE THE MUTINY.

Rapid Development of Railway Systems. Development of Irrigation Schemes. River Traffic Crippled.

THE RIVERS IN CAMPAIGNS SUBSEQUENT TO THE MUTINY.

PRESENT DIMENSIONS OF THE INDIAN RAILWAY SYSTEMS.

GENERAL EFFECT OF MODERN DEVELOPMENTS ON CANALS AND TRANSPORT PROFESSIONS.

Unreliability of Railway Systems.

SUMMARY OF THE SITUATION IN REGARD TO THE INDIAN NAVIGABLE WATERWAYS.

PART V. CONCLUSION.

LIST OF WORKS CONSULTED.

"Encyclopædia Britannica" (India). "History of India" (Virtue & Co.). "Ain-i-Aleban" (Blochman). "Irrigation Works in India" (Buckley). "Irrigated India" (Deaken). "The Army of the Indian Moghuls" (Irwine). "Early History of India" (V. A. Smith). "The Gates of India" Holditch. "History of the India General Steam Navigation Co." Braine. "Administration Report on Railways in India, 1909-10," (Official). "Waterways in Bengal" (Blue Book), Lees. "Trade Conditions and Crime on the Navigable Waterways in Bengal Assam and the United Provinces" (Mawley). "German Waterways" (Pointon). Antwerp, Rotterdam, and Amsterdam, and Inland Waterborne Traffic" (Pointon). "Inland Navigation—Ganges, Brahmaputra, and Meghna System of Rivers" (Pointon). "Account of Some Recent Improvements in the System of Navigating the Ganges by Iron Steam Vessels, 1848" (Robinson). "Report of the Committee of the Bengal Chamber of Commerce, 1904," Calcutta. "Report of the First Conference of Indian and Ceylon Chambers of Commerce, 1905." "Inland Navigation on the St. Lawrence, Ohio, and Mississippi Rivers" (Pointon). "History of Nepal," (Kirkpatrick). "The Nepal War, 1814-15." "The War in Hindustan, 1803-05" (Thorn). "Life of Evad Lad Lalu" (A. Peane). "The Navigable Waterways of India" (R. B. Buckley), Journal of the R.S. "The Bhutan War, 1864." "The Burmese War, 1824" (Snodgrass). "From Cabul to Komasi" (Sir James Wilcox). "Kaye and Malurun History of the Indian Mutiny, 1837-58." "Storio do Mogu" (Maunesi Muir). "Bernier's Travels." "Memories" P. de Corteille. "The Indian Waterways" (W. P. Andrew). "History of India" (Elphinstone).

NOTE.—The sketch-maps of India,[1] 1765, 1805, 1837, and 1857, and the "Plans of the Cities of Delhi, Agra, Allahabad, Cawnpore, Lucknow, and Benares," were taken from the Imperial Gazeteer Atlas of India, and were shown by the kind permission of the Rt. Honble. the Secretary of State for India, and Messrs. John Bartholomew & Co., of Edinburgh, to whom the acknowledgments of the author are due.

[1] Not reproduced—Ed. R.U.S.I.

I.—INTRODUCTION.

The Importance of the Question.

LADIES AND GENTLEMEN,—

THE subject on which I propose addressing you this afternoon, is one which, outside commercial circles, does not seem in recent years to have commanded the attention it undoubtedly deserves. The past sixty years mark a period of exceptional stress and progress, in the development of all branches of science and invention—and in India and England, as in all other civilised countries, the march of events has been so rapid, that in our anxiety to push on our railway systems, and other forms of modern rapid transport and locomotion, some of our most durable and valuable natural assets and resources, such as navigable inland waterways, for instance, have been lost sight of, and neglected to an extent which has resulted in the British Empire being, at the present moment, one of the most backward of the civilised nations in this particular regard. In no part of the Empire is this more noticeable than in British India, where we have waterways unsurpassed for their natural potentialities by any in the world; which in the past have played no unimportant part in the conquests and development of the country, but which, with the advance of Western civilisation, and modern methods of transport and travel, now lie idle as highways of commerce, and have been reduced to the status, in some instances, of mere open drains, to receive the sewage of the populous cities on their banks. Cities which, in bygone ages, owed their opulence and magnificence to the very positions they occupied, and where the ruins of extensive quays and ghats, riverside gardens and temples, palaces, and other signs of former prosperity and wealth, now bear eloquent testimony of the days when the commerce and the armies of the nations, passed in stately fleets on the great waterways flowing below.

So far as India is concerned, however, this question of its navigable waterways has recently received some consideration, and the time has now undoubtedly arrived when this question should be carefully and thoroughly investigated in all its aspects, and all existing defects removed. The railway systems, and irrigation projects, in the particular area chosen for examination this afternoon, are now approaching a stage of development beyond which further extension has been admitted to be unnecessary, and whilst the paramount necessity for allowing the claims of railways and irrigation projects precedence over all other schemes designed by the State for the develop-

ment of the resources of the country may be conceded, it must clearly be borne in mind that both these great departments of public work are being carried out, directly or indirectly, at the expense of the navigable rivers of the country. It will therefore be wise, even at this, the eleventh hour, to take careful stock of what is left to us of these once magnificent waterways, and to consider, before it is too late, what steps can even now be taken to conserve the water still remaining therein to provide for its preservation, and their future systematic development in relation to the other great lines of inland communication.

The vital importance of this question of the Indian waterways will, in view of the whole of the past history of these rivers, at once impress itself on the thoughtful mind. More especially will this be so in the case of those who, like myself, have actually seen many of these changes come about, and have had the further advantage to have voyaged in recent years over these old and disused waterways. Between 1903 and 1907, I had a good deal to do with the waterways in the Gangetic and Brahmaputra systems, where I was deputed to enquire into river crime, suppress river piracy, and to submit a scheme for the effective policing of the waterways. More recently I have voyaged down the Danube in Austria, and the Rhine in Germany, and from what I have now seen both of Indian and European waterways I am so impressed with the natural potentialities of our river systems in Northern India and with the great danger involved in neglecting them any further, that I have gathered together such information as is available, from the works of leading authorities on the subject, from which, together with the results of my own personal observations, I have prepared these notes for your consideration this afternoon.

It was with the aid of these waterways that all Indian Empire-makers in the past ages pursued their operations, enlarged and linked up their possessions; and, finally, when driven back or sore oppressed, the conquerors had more than once to fall back on the rivers as their one and only means of retreat. This was so with the Greeks, under Alexander, and again with ourselves 2,000 years afterwards, during the dark days of the Indian Mutiny; and, even to-day, it will not entail too much of a strain on our imaginations, to perceive that, with our railway systems paralysed, our roads in the possession of a hostile population and enemy, it will be on the navigable waterways of Northern India that we shall finally have to depend, in maintaining our hold on the heart and arteries of the country, so long as this is possible, and along which will lie our only hope of getting back to our base—the sea!

With all questions connected with commercial controversy, in regard to the business relations, as it were, between railways and waterways, we shall this afternoon have no concern. The question has already been very ably thrashed out

and discussed elsewhere, and it is satisfactory to know that experts on both sides are agreed that there is no reason whatsoever why railways and navigable waterways should not be worked alongside each other, with great financial advantage to both, and there this aspect of the question may, so far as we are concerned, remain.

General Arrangement of the Subject.

We will deal with the subject exclusively from the point of view of military history, to which end, I shall endeavour to explain briefly to you the relation these great river systems bear to the immense tracts of country with which we shall be dealing—an area equal to the whole of Central Europe and France put together. I will indicate, as concisely as possible, the part these navigable waterways have played from the earliest times to the present day, in connection with the advance of armies and conquerors, and in the subsequent steps taken by them for maintaining their control over their new possessions. I shall show how these rivers, to this day, affect questions relating to the defence of our frontiers, the command they enable us to maintain over centres of great political and religious importance, in the interior of the country; the important links they form between our great inland cantonments and arsenals, and the sea, and the relation they bear, generally, to all questions of internal defence. I shall also demonstrate to you the different changes which have taken place, from time to time, in the matter of inland communication, and in forms of locomotion and transport, which have gradually diverted the flow of commerce and the transport of armies and munitions of war, first from the rivers to the roads, and next from the roads to the railways. I will show how our great irrigation projects have not only affected the water supply of the navigable rivers, but have added fresh features for consideration, by the creation of artificial systems of waterways on the "Doabs," or land lying between the river channels. I shall then endeavour to give you a correct idea of their present-day conditions, the part these very rivers and waterways may possibly have to play in the future history of British rule in India, and demonstrate to you the danger of relying entirely on one set of destructible communications for all our requirements, with no alternative of a more permanent or durable nature to fall back upon as a last resource, or on occasions of emergency. Let us therefore now turn to the map of India shown on this sheet, from which it will be possible for us to obtain a general idea of the situation. When giving you a general description of the country, I could not possibly do better than follow on the lines of the excellent description given by Sir Thos. Holdich, in his articles on the subject in the Encyclopædia Britannica.

II.—GENERAL DESCRIPTION OF THE INDIAN EMPIRE.

Definition of Terms.

The Indian Empire, including Burmah, has an area of 1,766,000 square miles, and a population of close on three hundred millions inhabitants.

The length of India from north to south, and its greatest breadth from east to west, are both close on 2,000 miles. To this compact Dominion we have recently added Burmah, but as it is impossible to include that area within the scope of this lecture, it will not be taken into further account—more especially as the defects in inland navigation which exist in Upper India are not so accentuated in Burmah, where a highly efficient river service is maintained on the Irawaddi and other rivers.

Frontiers and Extent.

India is shut off from the rest of Asia on the north by a colossal mountainous region known in the aggregate as the Himalayas, amid which lie the independent States of Bhutan and Nepal, with the great table-land of Tibet behind, and the native Principality of Kashmir occupying the north-west angle of the country. At this point the mountains curve southward, and India is separated by the Safed Koh and Sulaiman Ranges from Afghanistan, and by a southern continuation of lower hills from Baluchistan. This western mountain wall is pierced at the corners, where it strikes southwards from the Himalayas, by an opening through which the Kabul River flows into India; an adjacent opening, the Khybar Pass, the Kurram Pass, and to the south of it the Gomal Pass, near Dera Ismail Khan; the Tochi Pass between the last two named, and the famous Bolan Pass still further south, furnish the gateways between India and Afghanistan. On its north-eastern frontiers, as on the north-west, the main Himalayan ranges throw off spurs and chains to the south-east, which protect Eastern Bengal and Assam from the wild tribes of Northern Burmah. The Empire included in these boundaries is rich in varieties of scenery and climate—from the highest mountains in the world to vast river deltas, raised only a few inches above the level of the sea.

* * * * * * *

Three Distinct Regions.

Now, looking at the country as shown in this map, we look down on the Indian Empire, as it were, from a balloon, and we perceive that the country may be roughly divided into three separate and distinct regions.

The first of these is the Himalayan—a colossal, mountainous

region of the north—by which the Empire is completely shut off from the rest of Asia, and amid which lie the independent States of Bhutan and Nepal, with the great tableland of Tibet behind, and the native principality of Kashmir further west.

The second is formed by the wide plains of Northern India —watered by the Indus, the Ganges, and the Brahmaputra,— and extending from the Suliman mountains on the west, right across the Indian continent to the Tippera and Lushai hills on the east.

The third is the Central Indian Plateau, and the Deccan— or the Indian Peninsula proper.

At the present time about 167 millions of people live on and around these river plains, which include the Provinces of the North-West Frontier, the Punjab, Sindh, the United Provinces, Bengal, Eastern Bengal, and Assam, Rajputana and the majority of States of the Central India Agency—corresponding roughly with the area garrisoned by the entire Northern Army, and the Fourth Division of the Southern Army of India.

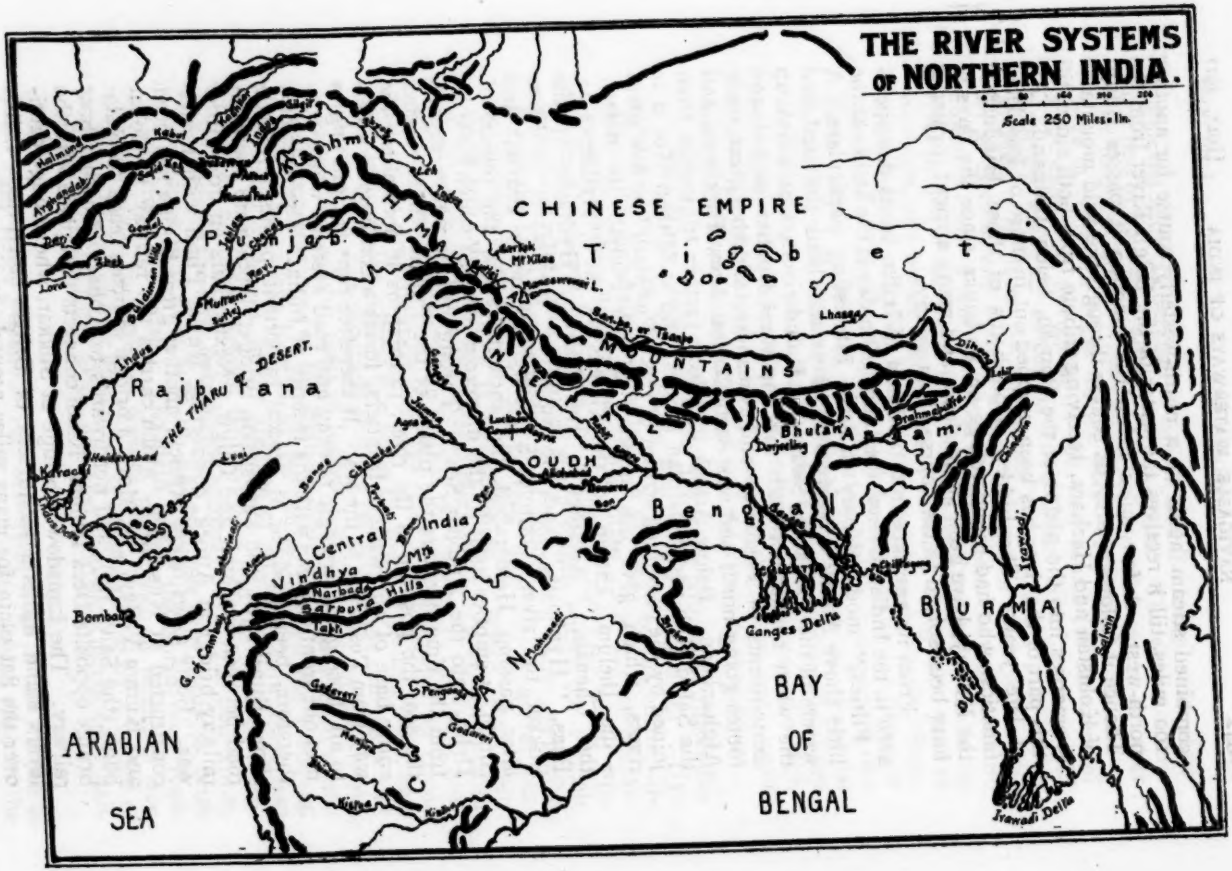
The third region has characteristics, geographical and ethnological, peculiarly its own, and has nothing in common with the first two, and though there are great possibilities for inland navigation on some of its rivers, it must for want of time be eliminated from further consideration this afternoon.

THE THREE GREAT RIVER SYSTEMS OF NORTHERN INDIA.

(1) *The Punjab System of Waterways.*

We may, therefore, now examine each of these three river systems in detail in the order I have now stated them.

The River Indus.—The first of these is the Indus or Punjab system of waterways. The Indus rises amongst the glaciers of the great Kilas group of peaks which overlook the Mansarawar Lake and the sources of the Brahmaputra, the Sutlej and the Gogra to the south-east. Three great affluents flowing north-west unite about 80 degrees east to form the main stream. Of these the southern or Gar forms a link in the great "Junglam" or Tibetan trade route which connects Ladakh with Lhassa, and Lhassa with China. Gartok, about 50 miles from the southern head of the Indus, is an important point in this trade route, and is now made accessible to Indian traders by treaty with Tibet and China. A little distance between Leh, the capital of Ladakh, the Zaskar flows into the main stream from the south. For about 230 miles in a north-westerly direction, the river now pursues a comparatively gentle and placid course over its sandy bed between the giant chains of Lahoul to the north, and Zaskar to the south. It then takes up the waters of the Shyok a tributary nearly as great as itself, from the north. The


THE RIVER SYSTEMS OF NORTHERN INDIA.
Scale 250 Miles to 1in.
CHINESE EMPIRE
Tibet
MOUNTAINS
Himalayas
Punjab
Rajputana
THE THARU or DESERT.
OUDH
Bengal
Bhutan
Assam
Central India
Vindhya Mts
Narbada
Satpura Hills
Tapti
Godavari
Krishna
Ganges Delta
BURMA
Irawadi
Salwin
Irawadi Delta
BAY OF BENGAL
ARABIAN SEA
Bombay
Karachi
Hyderabad
Lahore
Delhi
Agra
Lucknow
Allahabad
Benares
Patna
Calcutta
Darjeeling
Lhassa
Brahmaputra
Indus
Sutlej
Jumna
Ganges
Chambal
Sone
Mahanadi
Godavari
Krishna
Cauvery

combined stream holds on a north-westerly course for another 100 miles, till it receives the water of the Gilgit River from the north-west. A few miles below the junction it passes Bunji. Thence it follows a tortuous course through the wild mountains of Kohistan and Hazhara, receiving tribute from both sides, till it emerges into the plains of the Punjab, below Darband. All this part of the river has been mapped out in more or less detail of late years. The hidden strongholds of those Hindustani fanatics, who had found refuge on its banks since the days of the Mutiny, have been swept clean, and many ancient mysteries have been solved in the course of its survey.

From its entrance into the Plain of India, to its disappearance in the Indian Ocean, the Indus of to-day is the Indus of the "Fifties," modified only in some interesting particulars. A little above Attock it receives on its western bank the combined waters of the Panjkora, Swat, and Kabul rivers, which link up the water connection with the important frontier capital and cantonments of Peshawar and Naushera, and the great trade routes going north and west into Central Asia, Turkistan, and Afghanistan. Below Attock it collects further tributaries from the Safed Koh and Sulaiman ranges, and at Mithan Kot it is joined by the combined stream of the "Punjnad," or five great rivers, which give the province of the Punjab its name.—the Jhelum, known to the Greeks as the "Hydaspes"; the Chenab, "Acesines"; the Ravi, "Hydraotis"; the Beas, "Hyphasis," and the Sutlej, "Hyphanes." From Sukkar the river continues a steady southerly course, and after passing Haidarabad, the ancient Patala, the capital of Sindh, it empties itself by the numerous streams which form its Delta, into the Arabian Sea. Throughout its entire course, from the time it enters the plains of the Punjab, till it reaches the sea, the position of the river, running as it does along the entire base of our western frontiers, forms a continuous waterway from Peshawar to the sea. It therefore runs at right angles to all those great strategic railway and road systems which connect our frontier posts with the interior of India. The river has, therefore, been bridged at several important points. A little above Bunji is an iron suspension bridge, linking up the high road between Kashmir and Gilgit. Next occurs an iron girder railway bridge at Attock, connecting Rawal Pindi with Peshawar. Forty miles below Attock, another great bridge has been constructed at Kusalgarh, which carries the railway to Kohat and Kuram Valley. At Mari, a bridge of boats leads to Kalabagh (the Salt City), and northwards to Kohat. Another boat bridge opposite Dera Ishmail Khan connects that place with the railway. The Lansdowne bridge at Sukkar, whose huge cantilevers stand up as a monument of British enterprise—visible over the flat plain for many miles around—is one of the greatest triumphs of Indian bridge making. Kotri has recently been

connected with Haidarabad in Sindh, and the Indus is therefore now one of the best bridged rivers in India. The waters of this river have not hitherto been tapped to the same extent as other rivers in Northern India for the purposes of irrigation, and it is therefore still navigable all the year round for steamers of moderate draught, as far as Dera Ghazi Khan, some eight hundred miles from the sea, whilst country boats pass up as far as Attock, and even to within 12 miles of Peshawar on the Kobul River. From the most ancient times the boatmen and river people of the Indus have borne a high reputation as inland mariners, and before the advent of railways the greater part of the transport of goods between the north-west frontier, Baluchistan, the Southern Punjab, and the sea, was in the hands of these people. In 1843 Sir Charles Napier inaugurated the Indus Steam Flotilla service, which subsequently ran a regular service as far up as Multan on the Chenab, and finally disappeared with the extension of the railway system; now the high-sterned, flat-bottomed country boats of the Indus once again have the channels and sandbanks of the rivers to themselves.

The River Jhelum.—Of the five great tributaries the Indus receives from the Punjab, the first is the Jhelum, or "Hydaspes," which, after collecting the drainage of the entire valley of Kashmir, flows through that State till it reaches Muzaffarabad, whence it rounds the corner of the Punch and Pirpanjal Ranges, and turning sharp south, enters the Punjab above the town and cantonment of Jhelum—a place celebrated in former days for the art of boat building, a useful but neglected trade, which is carried on to a certain extent even to this day. Thence the river continues a south-westerly course of close on 250 miles, when it joins the Chenab in the Jhang district. In pre-irrigation days the river was navigable for country boats of the largest size up to the town of Jhelam itself, and it was along this waterway that the produce of the salt range and valley of Kashmir used in former times to find its way to the southern provinces of the Punjab, Rajputana, and so on to the sea. The valleys formed by its course through the Pirpanjal and Punch ranges, in the absence of railways, form important connecting links between British India and the State of Kashmir, where the river once again becomes navigable, and where, as visitors who have been in that fair vale can testify, a brisk river trade still exists. The main line of the North-West Railway crosses the river at Jhelum itself, over an immense iron girder bridge of fifty spans. It is again bridged by a bridge of boats near Pindadan khan, and also between Kushab and Shahpur.

The River Chenab.—The next great river in the Punjab is Chenab, or the "Acesines" of the Greeks, which rises in the Himalayan ranges of Kashmir and Spiti, and finally enters

British territory in the Sialkot district. The important cantonment of Sialkot is situated a short distance from its banks, and the main line of the North-West Railway is conveyed over its waters by a girder bridge near Lala Musa. It is again bridged by the railway in the Jhang district. This river used formerly to be navigable for country boats of the largest size as far up as Ramnagar, but its waters now provide one of the most extensive and profitable irrigation systems in Northern India, and as a result, navigation is only possible by small boats as far as Cheniot, a distance of 100 miles above its junction with the Jhelum at Timmu, whence it continues a steady south-westerly course, and passes on its east bank the Cantonment and Fortress of Multan, between which and Muzaffargarh it is once again crossed by an iron bridge, over which runs the southern branch of the North-West Railway. It finally joins the Sutlej near Alipur, in the Muzaffargarh district, and merges into the "Punjhad."

The River Ravi.—The next river of this group is the Ravi, or ancient "Hydrautis." It also has of recent years been heavily taxed for purposes of irrigation, and is therefore no longer navigable except when in flood, even by country boats of small size. Its main importance lies in the fact that it runs through the heart of the Provinces, the capital of which, with its fortress and cantonment of Mian Meer, is situated on its banks. In former days there used to be a brisk traffic by river between Multan and Lahore, but this has long since ceased to exist. The Ravi, however, provides a natural outlet for the districts of the Lahore division, and, if rendered navigable, would connect the capital of the provinces with the remaining navigable river systems of this group. At Lahore the river is spanned by an iron girder bridge over which runs the main line of the North-West Railway.

The River Beas.—We then come to the Beas, the ancient "Hyphasis." This is, in fact, only a tributary of the mightier Sutlej, into which it flows in the neighbourhood of the historic field of Sobroan. It deserves no special mention, beyond that it marks the limits of Alexander the Great's advance into India. It is unsuited for inland navigation, and the only point of interest connected with this stream is that it is bridged between Jalandhar and Amritsar for the passage of the North-West Railway line. It would be of no strategical value, even if inland navigation could be established thereon, and we therefore pass on to that which is in some respects the noblest of this group of rivers, the River Sutlej, or "Hyphanes" of the Greeks, which forms the boundary of the Punjab proper, and the eastern basin of which marks the division of the narrow watershed between the Punjab, or western, and the Gangetic, or eastern, group of waterways.

The River Sutlej.—This river rises amongst the same great group of Himalayan glaciers around the Khylas peaks, from which spring the Indus, the Brahmaputra and the Ganges. It flows north-west for some distance through stupendous mountain gorges, and then turns south-east, still forcing its way through some of the most magnificent mountains in the world, through the native States of Bashahr, along the western face of the Simla Hills, and thence through Saket and Bilsapor to the plains of the Punjab, which it enters in the Hoshiarpur district. At Rupar, where the river leaves the hills and enters the plains, it has a minimum depth at low water of 15 feet, and a width of 300 yards. After a further westerly course of 80 miles, it is joined by the Beas, whence the joint stream becomes known as the Gharra, and as such maintains a generally western course for another 250 miles, till it joins the Chenab and completes the "Punchnad" at Alipor. In its course through the plains it traverses the districts of the Jalandhar division, and forms the boundary between the Punjab and the native State of Bahawlpur. It therefore traverses and serves one of the richest and most prosperous tracts of country in northern India, and it has situated on its banks several cities of considerable importance: Rupar, the centre of much trading with the interior of the Hills and the starting-point of an important Himalayan trade route, Ludhiana and Phillour, a trade centre and a river fortress, respectively, of some importance. Further down is situated Firozpur, an important cantonment, fort, and arsenal. It cuts through the railway systems, both the North-West and Southern Punjab, and has therefore been bridged at great cost between Ludhiana and Phillour, between Firzopur and Kassur, and between Samasata and Multan. Before the days when its waters were diverted for irrigation a large river trade existed as far up as Rupar, and it formed the great trade route along which the produce of countries as far as Tibet found its way to the plains and thus to the sea; but, as is the case with the other rivers in this group, the Sutlej has been tapped heavily for irrigation, and navigation is now only possible as far as Firozpur. The value of this river does not cease with the limits of its navigation, for its upper valleys give foothold to an almost continuous and much-used trade and pilgrim route connecting India with Tibet over the Shipki Pass, while the proximity of Simla, the summer capital of the British Empire, to this route and river valley, is yet another feature of special interest in connection with the strategic and political value of the Sutlej.

Summary of the Survey of the Punjab Rivers. This completes our scrutiny of the Punjab group of navigable waterways, and you will no doubt perceive how completely and at how many points this river system cuts through the main lines of strategic railway leading to the western gates of our Indian

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Empire, as also to the one port on the Arabian Sea which at present serves the whole of North-West India.

(2) *The Gangetic System of Rivers.*

The River Ganges.—We may now pass on to the second or Gangetic group of the great river systems of Northern India. The Ganges rises at a place of great Hindu sanctity in an ice cave at the foot of the Himalayan snow bed near Gangutri, in North-Western Garhwal. Above Gangutri, the valleys of this river lead on to the Nilang Pass, over which runs a trade route of some importance into Western Tibet. The upper reaches of the river are known as the Bagiruti, on which stands Tehri, the capital of the feudatory of Tehri-Garwal. At Deoprag it is joined by the Alakunda, which runs up to the famous Hindu shrines of Badrinath, and thence leads up to the Niti Pass, the second important trade route into Tibet in this section of the Himalayan barrier. These two river valleys, therefore, in addition to being classified as important mountain trade routes, are also, in fact, two of the most frequented pilgrim routes from the plains of India to the sacred shrines at the head waters of the river, and places to which thousands upon thousands of pious Hindus travel annually.

From Deoprag the combined Alakunda and Bagiruti are known as the Ganges or "Gunga," which leaves the main chain of the Himalayas at Rikikhes, near which it is spanned by a fine suspension bridge, and thence shapes a southerly course for a short distance across the eastern side of the Dehradun Valley, and finally bursts through the Siwalik Range into the plains of India at that most sacred of Hindu places—Hurdwar. Thence it follows a tortuous course through the heart of the United Provinces. At Fatehgarh it receives on its left bank the Ramganga, a sub-Himalayan stream of fair size, and a little below that the Kali on its right bank, after which it follows a more or less easterly course, passing *en route* the important city of Cawnpur (of evil repute since the days of the Mutiny, but now a flourishing manufacturing centre), till it reaches Allahabad or the ancient Pryag—the headquarters of the Government of the United Provinces. Between Hurdwar and Allahabad the Ganges is bridged by the railway at no less than seven points, namely, at Balawalli, on the main O. and R. Railway; near Rurki; at Garhmuktesar by the same railway on its main line into Delhi; at Rajghat on the Aligark-Chandusi branch at Kasganj, on the narrow-gauge connection between Agra and Barreli; by a double bridge at Cawnpur and again at Papamau, near Allahabad, on the main line between Allahabad and Lucknow, and finally by the narrow gauge line from Bengal at Jusi, within sight of the fort at Allahabad; it therefore cuts through the entire group of strategic railways running east and west along its

northern banks. At the junction of the river with the Jumna at Allahabad, at a spot of great Hindu sanctity, stands an old Moghul fortress, now an important arsenal, which completely commands the waterway.

The Jumna and the Chambal.—The Jumna rises in the same group of glaciers from which springs the Ganges. It flows south-west, and after receiving many mountain torrents, enters the Dun at Kalsi, where the road to the military cantonment of Chakrata is passed over the valley by a fine suspension bridge, and thence, after traversing the western side of the Dun, it debouches on the plains of Hindustan at Badshahibagh, where it finally bursts through the Sewalic range, just as the Ganges does forty miles further east. It thence flows a course more or less parallel to the Ganges, passing *en route* the important cities of Delhi, Muttra, and Agra (with its fort and arsenal), a little below which it is joined on its right bank by a great conglomeration of rivers and torrents draining the northern catchment area of the Central Indian States and Eastern Rajputana, of which the main stream is the River Chambal. The country drained by this group of rivers is for the most part wild and rugged, and the bed of the Chambal is for the greater part of its course much lower than the surrounding country, while, unlike the Himalayan snow-fed rivers on the opposite side of the Gangetic basin, it has to depend solely on the rainfall in the catchment area for its supply of water. During the dry seasons of the year, therefore, it is nothing more than a series of great pools, alternating with long shallow reaches, and it has hitherto never been of any use for navigation. But there are great possibilities in regard to water storage in this river, as was advocated in the fifties by Sir Alfred Cotton. Between Etawah and Allahabad there are more tributaries from Central India—the Betwah and Ken, but for the same reasons as apply to the Chambal, they are of no value as navigable channels. They have also recently been heavily tapped for irrigation, and these new irrigation channels might possibly be of some use as a waterway, in the case of the Betwah canals, in the vicinity of the cantonment of Jhansi. The Jumna and its tributaries cut through the great strategic railways of Northern India, both those running east and west, and those running south-west from Upper India to Bombay. It is thus bridged by the North-Western Railway between Saharanpur and Umballa; again at Delhi by a bridge which combines the traffic of the East India main line and that from the O. and R. system; at Muttra by the narrow gauge line between Rajputana and Hindustan; at Agra by a double bridge forming the junctions between the East India and G.I.P. systems; again at Calpi on the main G.I.P. line between Lucknow and Bombay, and, finally, at Allahabad at a point a little above the fort, where it cuts through the combined Calcutta and

Bombay main lines of railway communication. Its tributaries, especially the Chambal, similarly traverse at Dholpor the main G.I.P. line between Agra and Bombay, and again intercept the new direct G.I.P. route between Northern India and Bombay, via Muttra and Nagda. These are the principal points of impact between this group of rivers and the railway systems. As a matter of fact, the lines between Upper India and Bombay in this part, run through so rugged a country, that it is impossible to deal with the scores of bridges and culverts which have been constructed, each of which would be a source of anxiety from the point of view of internal defence.

No two rivers in Northern India are more heavily tapped for irrigation than the Ganges and the Jumna, both of which have been drained dry at the points where they enter the plain, while their remains are caught up again for a second time below Rajhghat and Delhi respectively. When irrigation is in full swing, both rivers below these two points are mere trickles in the sand, and their waters now supply one of the most important irrigation systems in the world, the channels of which traverse the entire Duab from the hills to a point below Cawnpur, and far into the districts of the Eastern Punjab. In pre-irrigation days the Ganges was navigable by country craft of the largest size up to Anapshahr, the port for Delhi, and by boats of smaller size almost up to Hurdwar. The Jumna was similarly navigable up to Delhi, and by smaller boats up to the foot of the Himalayas. At the present time, however, all boat traffic has practically ceased above the junction of the two rivers at Allahabad. From Allahabad, from which point the river again becomes navigable for country boats, the Ganges flows eastward through the Allahabad and Benares division of the United Provinces. Twenty miles below Allahabad, on its right bank it receives the Tons, an inconsiderable stream from the Kaimur Hills, the only point of interest connected with which is the bridge which conveys the East Indian Railway over its waters. It then passes the important city of Mirzapur, with its neighbouring shrine of Bindachal, at a point where the Kaimur range impinges on the river; a little further on the fortress of Chunar (now a reformatory school); thence it flows to the ancient and holy city of Benares, where the river is once more crossed by a magnificent iron girder bridge, named after Lord Dufferin, over which runs the main line of the O. and R. Railway, connecting with the East Indian system at Moghal Sarai.

The Gumti.—Some twenty miles below Benares, the river is joined by the Gumti, a sub-Himalayan stream of considerable importance, which passes through the whole of the Province of Oudh, and on the banks of which are situated the headquarters of several districts, including the historic city, and important

military cantonment of Lucknow. It crosses the B. and N.R. and O. and R. systems at several points, and is navigable by country boats of the largest description during the rains as far up as Lucknow, and at other seasons up to Jaunpur.

The Gogra.—At the point where the Ganges enters the Province of Bengal, it is joined by a tributary of the first magnitude in the river Gogra, representing the combined waters of the two important Himalayan streams—the Sarda and he Koriala, both of which take their rise in the great group of Himalayan glaciers we have already spoken of. The Sarda—or "Kali," as it is known in the mountains—forms the boundary between British territory and Nepal, and along its valley there runs an important trade route. The Koriala drains the Western Nepalese Himalayas, and along its upper valleys runs yet another practicable trade route, via Simikot and thence over the passes to the Munsorowar Lakes, and table-land of Tibet. Both streams enter the plains within thirty miles of each other in the north of Oudh, and merge into the Gogra a little above Bahramghat, where it is bridged by an iron girder bridge of great length, over which runs the main narrow gauge line, connecting Oudh with Bengal; it thence passes Ajudhia, the ancient and holy city of the Hindus, is again bridged at Dohrigat by a branch line of the B. and N.R., and once again by the same railway at a point a few miles above its confluence with the Ganges, at Revalgung, where it is crossed by the narrow gauge line between Allahabad and Calcutta. This river at present enjoys the distinction of being one of the very few which has not so far had its waters drawn off for irrigation. It therefore retains much of its ancient potentialities as a navigable waterway, being even to the present time navigable by steamers and country boats of the largest size up to Bahramghat, and by boats of lesser size as far up as Kehri on the Sarda, and Katarnianghat on the Koriala.

The Son.—The Ganges next receives a second great contribution from its southern basin in the River Son, which drains the northern slopes of the Kaimur range and the table-land of Sargujar. This river has now been taken up almost entirely for purposes of irrigation, and even its canals and channels are of no value to us, except that if they were breached, the narrow neck of land between the Ganges and the hills might be perhaps most effectively flooded; and the only other feature of interest is the fact that it goes across the main line of the E.I.R. at Dorighat, and again at Arrah, at both of which points there are bridges of great size. From Patna downwards the Ganges still retains much of its former splendour as a great waterway.

The Gandak and the Kosi.—Between this point and Golando, where it joins the Brahmaputra, it receives the entire

drainage of the Nepal Valley and the main Himalayan range on the northern frontiers of that State, which is conveyed by innumerable streams across the plains of Behar and Bengal, and of these the chief rivers are the Gandak, a snow-fed river of considerable magnitude, navigable by country boats almost up to the foot of the hills of Nepali; and the Kosi which falls into the Ganges further east. Both these important rivers, once they leave British territory, traverse the valley of Nepal, and in their upper reaches form the main lines of communication between that State and Tibet. Here again it will be seen how completely the two groups of railway systems connecting the capital of India and the port of Calcutta with the interior—the narrow gauge system on the northern, and the broad gauge on the south bank of the Ganges are traversed and intercepted by the river systems. This is especially the case of the northern group of railways where bridges of great size are so frequent that no object will be gained by making a selection of any particular one. The entire northern area is also subject to floods of exceptional magnitude, which, as experience has shewn, frequently interrupt the railway service. From Patna the river maintains a steady easterly course as far as the Rajmahal Hills, whence it turns sharply to the south. About 50 miles further on it begins to branch out over the level country, and this spot marks the commencement of the great Gangetic Delta.

The Gangetic Estuary and Delta.—The main channel now takes the name of the Pudda, and proceeding in a south-westerly direction past Pubna to Golando, where it is joined by the Jamuna or main stream of the Brahmaputra. The vast confluence of waters rushes towards the sea, receiving further additions from the hilly country on the east, and forming a broad estuary under the name of the Meghna, enters the Bay of Bengal near Nokhali. This estuary, however, is only the largest and most easterly of a great group of channels, the most westerly of which is the Hugli, which leaves the parent Ganges above Murshidabad. The upper angle of it consists of rich and fertile districts, but towards its southern base resting on the sea, the country sinks into a series of innumerable channels—a wild waste of waters known as Sundarbans. The most important channel of the Ganges for commerce is the Hugli, on which stands Calcutta about 90 miles from its mouth, and in the vicinity of which are the cantonments of Barrakpor and Dumdum, the arsenal at Fort William, and a small arms and ammunition factory at Kossipor. The spills from the main streams of the Ganges which form the head waters of the Hugli have of late years been allowed to silt up, with the result that navigation above Calcutta, except in the rains, is conducted by native craft only, and the regular steamer service which used in former days to run from Calcutta upwards as far as Allahabad, now

only runs by a circuitous route through the Delta via Golando, and then only up as far as Buxa, 40 miles above Patna on the Ganges, and up to Ajudhia on the Gogra. Below Calcutta, however, and through the Delta, important boat routes connect Calcutta and the Hugli with the eastern branches of the river for both native craft and river steamers of the largest size, of which an efficient service exists.

Summary of the Survey of the Gangetic Rivers.—This vast group of rivers provides the whole of the United Provinces and Bengal, and the central Himalayan area—or that garrisoned by the 7th and 8th Divisions of the Northern Army—with a permanent and direct line of communication from the interior to the modern capital of India and the eastern seaport. The Ganges, has, from time immemorial, been more closely connected with the economical, social, religious and political history of the country, than any other river in India. On its downward course will be seen the evidence of former dynasties and the monuments of conquering races which have entered the land by its western gates, and thus spread themselves outwards to the sea. Aryans and Hindus, Buddhists and Moslems have all clung to the great waterway on which to this day are to be found their sacred places and strongholds, and which even now form great centres of life and the scenes of great periodical assemblages of the Hindu people, and therefore of vast political importance to us; and so on, all down the valley of the Ganges to the sea, this Hindu connection runs unbroken. Then as we voyage up the river from the sea, the tale of our own advance into the interior of the land is writ large and plainly in the cemeteries in the old disused cantonments dotted on the river bank which have been abandoned one after another as our frontiers extended further westwards. We cannot, therefore, emphasise too strongly the necessity for the retention of our hold on this great waterway, and for its development as an imperial asset of first-rate importance. In spite of all the disadvantages under which it now labours, the Gangetic waterways still provide us—exclusive of the Delta—with something like 2,000 miles of navigable channels, of which all but 400 would be workable by country boats of large size and steamers of moderate capacity.

(3) *The Eastern Bengal and Assam Group of Rivers.*

The great potentialities of the Gangetic group, therefore, speak for themselves, and we may now pass on to the third and last system which we shall examine, viz., the Brahmaputra, or eastern group of the great rivers in Northern India.

The River Brahmaputra.—The mighty River Brahmaputra for nearly half its course runs along the entire length of the lofty plateaux of Southern Tibet to the north of the limits of our Indian

Empire, and even there its course has so material a bearing on all strategical questions involved in the defence of our Northern frontiers, that its course through foreign territory in Tibet needs careful study and scrutiny. Its early beginnings take their rise amidst the same mighty mass of glaciers from which spring the several other great rivers we have already dealt with. It flows a nearly easterly course for a distance of about 700 miles parallel to the chain of the Himalayas at a distance of about 100 miles therefrom. It receives tribute from both banks, but of these the only one that may be noted is the Raka Tsanpo, a lateral affluent flowing for 200 miles parallel to the main river, and some 20 or 30 miles to the north of it. It is an important feature as affording foothold for the "Junglam," or high road of southern Tibet, which in this section is denied by the actual valley of the Brahmaputra. Fifty miles from its source the river and the Junglam touch each other, and from that point as far as Tadum for 130 miles the road follows more or less closely the left bank of the river; it then diverges into the valley of the Raka, and rejoins the Brahmaputra again below Janglachi. The upper reaches are nowhere fordable between Tadum and Janglachi, but there is a ferry at Likchi opposite Tadum, over which passes much trade between Tibet and Nepal. From Janglachi to Shigatse, a distance of about 150 miles, the river is navigable the channel being open and wide, and the course straight; the elevation here being over 13,000 feet, this reach of the river is probably the highest system of navigation in the world. From Shigatse to the mouth of the Kyi-chu or Lhasa River, there is no practicable route, the river being unnavigable. The Junglam takes a circuitous course southwards to Gyangtse, and thence via the Lamdoh-cho over the Khambala to the ferry near Chushul; thence up the valley of the Kyi-chu; which is navigable for small boats for about 30 miles and leads to Lhassa northwards. Beyond Kyi-chu the river once more enters a wild and mountainous country, its course through which has been traced, but of which very little is known really until it finally appears in the plains of Assam as the Dihong. At Tadum the river is one half as wide again as the Ganges at Hurdwar, in December, viz., about 250 yards, and at Chushu below the Kyi-chu, is seven times larger than the Ganges at Hurdwar. Between Tadham and Junglachi, a distance of over 150 miles, the difference in elevation is, apparently, not very much more than 1,000 feet. The river is probably capable of development in expert hands into a navigable water channel. If this be so, then this section of the river from Tadum to Shigatse, will become of considerable strategical potentiality in the hands of any aggressive military power which establishes itself on the southern plateau of Tibet. In any case, whether ever rendered navigable or not, the upper Brahmaputra Valley on the north of our frontier, will always remain the main line of communica-

tion between China and India, and we have already on record the fact that the Chinese in 647 A.D., over-ran Tibet and the Western Himalayas into Kashmir, and poured down through the northern passes of Nepal into the very plains of India, a portion of which, chiefly in the neighbourhood of the present division of Behar in Bengal, they completely dominated; and again in 1792 they concentrated in the very heart of Tibet a force of 70,000 men, which poured into the valley of Nepal; here they inflicted a severe defeat on the Nępalese, which has resulted in a complimentary recognition to this day by the smaller state of the suzerainty of the greater. In view of these circumstances, no doubt, this section of the Brahmaputra has already received the attention of our hydrographers.

The Dibong and the Lohit.—On its appearance in the valley of Assam near the frontier station of Sadyia, the Dihong is joined by the Dibong and the Lohit from the eastern mountain regions which mark the watershed between the Indian and the Burmo-Chinese river systems. From Sudya the river flows almost due west through the fertile valley of Assam, collecting tribute from both banks till it reaches Dhubri, whence it turns sharp south and heads a steady course into the Bay of Bengal.

The Teesti.—Some 30 miles below Dhubri it is joined on its left bank by the Teesti, a snow fed river of considerable size, along the upper reaches of which, above Darjeeling runs the main route into Tibet from Bengal, via the Jelupla Pass into the Chumbi Valley, and thence to Gyangtsi, where it joins the Junglam; this marks the route followed by our recent military mission to Lhassa, and one which, now that we have abandoned the Chumbi Valley (the key of the whole situation), becomes vested with peculiar interest to all concerned with the question of frontier defences.

At Golando, the Brahmaputra joins the Ganges and thence to the sea the combined rivers have already been described.

The Brahmaputra still retains the proud distinction of being unbridged, and its waters are navigated by a regular service of river steamers of the largest size as far up as Dibrugah, which is therefore in direct water communication with Calcutta.

The Meghna.—The Meghna and its branches are similarly navigated by the largest steamers as far up as Bhairup Bazaar in the Maimansingh district, and beyond that by steamers of moderate size as far up the Sarma as Sylhet, and the Barak up to Silchar, before the advent of the railways the entire trade of the province was carried on by water. Dacca, the capital of the new province of Eastern Bengal and Assam, is situated on a spill of the Brahmaputra, a little distance above Narayanganj, whence it is in direct water communication with all parts of the province and the metropolis at Calcutta. Within sight of the estuary of the Meghna, is the new and rising port of Chittagong,

which is served by the E.B.A. Railway, and between which and Narayanganj there exists a brisk trade carried on by country boats and steamers.

Summary of the Survey of the Rivers in Eastern Bengal and Assam.—The province of Eastern Bengal and Assam is therefore provided by nature with one of the most magnificent water systems in the world. This whole tract of country is one that has been designed by nature to be developed by its waterways, aggregating as they do a length of 15,000 miles, of which at least 10,000 is navigable permanently. But here we find, as elsewhere is the case, that the rivers have been in the past entirely neglected and left to their own devices, and that steamer companies and the native trading fleet were left to work out their own salvation as regards the maintenance of navigable channels, and plotting out of the waterways. As a result also of this neglect, the general lawlessness and piracy which prevailed on all the waterways in Bengal and Eastern Bengal not only imperilled river trade, but gave rise to very false notions amongst the river traders and the river people, of the power of the Sirkar in regard to the maintenance of law and order. Measures have recently been taken by local governments to improve matters, but great difficulties will have to be overcome before any general success is achieved. Moreover, this matter of the development of commercial and strategic waterways is quite beyond the scope of a local government, hampered as it is with limited means and other details of local administration, to deal with satisfactorily. Of recent years the railway systems have been considerably extended throughout the province of Eastern Bengal, but not to the same extent as in other parts of India. The country is, in fact, unsuitable for railway extension, and the two main lines running up into the Assam Valley, both splendid feats of engineering—especially the hill section of the Assam-Bengal Railway—traverse the entire drainage on both sides of the basin, bridges are therefore very numerous, and the traffic is subject to frequent interruptions by floods like those which so completely interrupted all railway communication by the E.B.A. railway with Assam for a period of eight weeks last year. Then again, the Assam Valley and Eastern Bengal, are peculiarly liable to earthquakes—a fact which must always be borne in mind when the question of the stability of railway lines in this province, comes up for considereration. The whole of the area served by this group of waterways is included in the 8th Division of the Northern Army, the headquarters of which at present is 600 miles to the west, at Lucknow. Before the province came into existence six years ago, this section of our Empire had not attracted much attention as regards its internal elements of disorder, and it has enjoyed almost complete immunity from

frontier scares and troubles of the description so frequent on our north-west boundaries. The provincial authorities have, therefore, been left to themselves to deal with the situation with the assistance of some efficient battalions of military police. Troops have only been employed in any considerable numbers when it became necessary to deal with extraordinary tribal troubles on the borders. In each such case the waterways have played an important part in the conduct of operations. Recent events, however, both in the interior of the province itself, as also along its frontiers on the north, and at the head of the Brahmaputra Valley, may possibly put an entirely different complexion on the local state of affairs. It would, therefore, be as well if all our resources in the matter of our interior lines of communication in this part of the Empire, were developed on their natural lines, and brought more into keeping with the obvious requirements of the times.

Natural Potentialities of the Three River Systems combined.

This finishes our survey of the third of the great northern river systems, one which exceeds in the volume of its waters, and the length of its navigable channels, both the Indus and Gangetic systems combined. Its natural potentialities therefore need no emphasis. Combined with the Gangetic system it provides northern India with a permanent unbroken line of water communication from Hurdwar to Dibrogarh—a distance of 1,500 miles. The two river systems aggregate between them something like 24,500 miles of natural waterway, of which some 15,000 are even now permanently available for purposes of inland navigation. When we add to these the 2,000 miles of navigable waterways of the Punjab rivers, we get something like 26,000 miles of navigable waterways in the great river systems of northern India, which, if made use of, will provide us with an indestructible and continued line of communication from the interior of the Empire to both sea coasts on the Arabian Sea and Bay of Bengal. Moreover, it will be seen from the courses shaped by these three combined river systems that they provide in an area larger than the whole of Central Europe and France put together, transverse, as well as direct lines of communication, *i.e.*, that between them they traverse the entire breadth of the Empire before getting to the sea on opposite shores—a combination of advantages not possessed by any other group of river systems in any one country in the world, excepting perhaps China. In fact, if a navigation canal were to be run through from the Jumna to the Sutlej Valleys, it would be possible to establish through water communication across the plains of India between the Arabian Sea and Bay of Bengal. Here, therefore, we have natural assets of the greatest

possible commercial, political, and strategic value, the potentialities of which cannot be exaggerated. Let us therefore, now consider how it has come about that these inland waterways have been lost sight of and neglected. Let us consider the part each of these rivers has played in the history of India, and examine that process of transition, which has so completely diverted the traffic in the first instance from the rivers to the roads, and again from the roads to the railways.

(To be continued.)

THE ORGANIZATION OF THE BRITISH BOARD OF ADMIRALTY.

Translated from the *Marine Rundschau* by Colonel H. Wylly, C.B., and published by permission.

PART II.

1. DISTRIBUTION OF THE WORK.

FROM what has been said of the organization and scope of the Admiralty, and about the existing distribution of the work and responsibility, the Admiralty appears as a governing machine wherein the motive power is actuated by individual Lords subordinate to the First Lord of the Admiralty; these are not, however, Heads of Departments in the strict and narrow sense of the word, but are entrusted with the supervision of the several departments handed over to them, and carry on the routine work independently. They are in regular and permanent connection with one another, exactly in the same way as each is connected with the various departments under him. They, however, invariably submit questions of special importance for the decision of the First Lord of the Admiralty. Joint meetings of the Board further ensure the thorough discussion of matters of common interest, and thus supplement the advisory powers of the individual Lords.

The powers of the Board are of a dual character—administrative and advisory. The latter is represented by the word "Board," and is carried out as a rule by means of joint meetings in the Council Room—less frequently by correspondence. The former is wielded usually in the offices of the Lords and Secretaries. All great questions, however, are decided only by the First Lord of the Admiralty, who of himself can order and carry through any measures in regard to which he is certain of the support of the Cabinet.

The following distribution plan, dated 20th October, 1904, is a guide for the general arrangement of the work among the different Lords and Secretaries:—

First Lord of the Admiralty—General control and Supervision.

Lords and Secretaries.	Duties.	Departments and Sections.
The First Sea Lord.	Adviser of the First Lord of the Admiralty on all important matters.	Naval War Council, composed of:— a. Naval Intelligence Department. b. Naval Mobilization Department. c. Asst. Secretary to the Admiralty

Lords and Secretaries.	Duties	Departments and Sections.
The First Sea Lord.	Distribution and movements of the Fleet in peace and war.	d. Director of Naval War College.
		Director of Naval Ordnance and Torpedoes.
		Inspector of Target Practice.
	Important questions of naval law and discipline.	Hydrographer of the Navy.
		Military and Legal Branch of the Permanent Under Secretary's Department.
The Second Sea Lord.	Personnel.	Admiral Comdng. Coast Guard and Reserve.
		D.A.G. of the Royal Marine Forces.
	Organization.	
	Disposal of lands.	Chaplain of the Fleet (Director of Naval Schools).
	Coastguard and Reserves.	Medical Director General.
	Sanitation.	Acct. General (pay and salaries).
		Engineer in Chief (personnel).
		Naval Branch of the Permanent Under Secretary's Department.
The Third Sea Lord. (Controller of the Navy).	Construction and dockyards.	Director of Naval Construction.
	Materiel.	Director of Dockyards.
		Director of Stores (except certain construction stores) munitions, food and clothing.
		Director of Naval Ordnance and Torpedoes (in regard to matériel only).
		Engineer in Chief.
		Inspector of Dockyard Expense Accounts.
		Committee on Designs (under the superintendence of the First Sea Lord).
The Fourth (Junior) Sea Lord.	Transport.	Director of Transport.
	Victualling, clothing and all supplies not allotted to the Controller.	Director of Stores.
		Director of Victualling (for rations and clothing).
	Pensions of subordinates.	Accountant General (for pensions).
	Claims for damage by ships of war.	Legal Branch of the Permanent Under Secretary's Department.
Civil Lord.	All works. Office personnel.	Director of Works.
		Accountant General (for payments).
	Schools.	
	Greenwich Hospital funds.	Director of Greenwich Hospital.

Lords and Secretaries.	Duties	Departments and Sections.
Parliamentary and Financial Secretary.	Finance. He is the representative in Parliament of the First Lord of the Admiralty.	Accountant General. Director of Contracts. The finance work of all Departments. Judicial Department.
Permanent Under Secretary.	General business. Correspondence by order of the Board for individual Members, both the secretaries, and certain departments and sections. Personal business of officers and officials of the Admiralty. Registration and Records. He is both "mouthpiece" and "newscentre" of the Admiralty.	Six Sections.... Military Branch, Naval Branch, Civil Branch, Legal Branch, Record Office, Section for the heads of Offices, Registry and Secretariat generally.

The above tables make clear the structure of the whole organization, and further, the particular work which falls to each member of the Board under the distribution scheme, with the specification of the particular departments and sections allotted for assistance in carrying out the duties.

2. CONDUCT OF BUSINESS IN THE ADMIRALTY.

Up to the year 1869 all important business was discharged by means of the joint work of the Board at sittings held daily. As conditions changed, it was found that this procedure was hardly suitable, and the methods of business-conduct were introduced which are now in vogue. The great mass of business is now transacted by means of the written interchange of views, and consideration and decision by the Board are reserved only for very special matters.

Unless the First Lord of the Admiralty directs otherwise, meetings of the Board usually take place once a week. The following matters are brought forward: Estimates; plans for new ships and important alterations in the same; ordinary repairs; matters concerning the dismissal and re-appointment of officers; orders in council; circulars and other important announcements of a legislative character; and finally, any other matters which the First Lord of the Admiralty may direct to be discussed. Nothing can be brought before the Board without the approval of the First Lord. For the information of the members of the Board an agenda is prepared containing all matters to be brought forward at the meeting. Only very few political questions are discussed; as stated by the Commission of 1861, in the Board of Admiralty, as in other departments, in course of time party spirit is eclipsed by departmental spirit.

The First Lord of the Admiralty arranges special sittings

in regard to questions of construction, and these are attended, on summons, by the Controller and Director of Naval Construction, the Director of Ordnance and the Engineer-in-Chief of the Navy.

A *Précis* of any decisions arrived at at the meetings of the Board, and of all important enactments of the Lords, is printed daily, and circulated among the members, heads of departments, and of sections. The Minutes themselves are passed to all departments concerned. Should the First Lord overrule the views of the members of the Board, these can put their opinions on record without affecting their right of retirement.

All Admiralty documents are at once printed, and the more important passages are embodied in a memorandum given to every member of the Board and to the Secretaries, so that they can call for any document they may specially wish to see. These memoranda then reach the Permanent Under Secretary of State, who looks through them to see that they are correctly transcribed, and adds any further observations which he considers they require. Except in very special cases, he does not see these excerpts again in the intermediate stages; but every document is registered at each stage, so as to ensure its whereabouts being known.

The individual Lords put their votes or remarks on the document, which finally comes back to the Department from which it originally issued, and in which, by the section specially concerned, the votes or decisions of the Lords will be carried into effect. The fair copies of the enactments prepared in the different sections are laid before the Permanent Under Secretary of State for execution. He signs all completed documents and orders in the name of the Board, with the exception of certain papers addressed to the Treasury, which are dealt with as follows: After consultation with the Accountant General in regard to financial points, these documents are placed before the Financial Secretary, who signs such as he considers necessary. In practice, however, most of them come back to the Permanent Secretary for execution. In important matters requiring the approval of the Treasury, the concurrence of the First Lord of the Admiralty is needed before the document is executed.

The Permanent Secretary sees that the different departments and sections do not work independently of, or in opposition to one another. He takes care that the administrative link is not broken by any change in the composition of the Board of Admiralty. He is thus the repository of a vast mass of information accessible to no other single individual; he is the guardian of the Tradition of the Admiralty—almost the lever which sets the machinery in motion. For the Board, and particularly for the First Lord, he is the organ of inter-communion with the Fleet, and with other officials of State, both at home and abroad, under all circumstances wherein neither the individual Lords nor heads or representatives of departments have direct intercourse. The

orders, enactments and documents emanating from the Admiralty are worked up each in their particular sections, so far as they do not concern other departments and sections. The Staff of the department of the Permanent Under Secretary of State contains a far larger number of high officials than others which do not deal with so vast a correspondence.

3. NAVAL CONTRACTS.

The Director of Naval Contracts procures on demand of the other departments all stores, necessaries and machinery required for the use of the Fleet, naval forces, and naval establishments, with the exception of ships and ships' engines, and such of the requirements for new construction and repairs as come within the province of the Director of Naval Construction. The Director of Contracts also deals with the sale of condemned vessels and old stores of all kinds. He puts himself in communication with the heads of departments and sections in regard to the business men and firms who are required to submit indents for the supply of machinery and other materials. He procures supplies, either by means of advertised public tender, or by limited competition, or, in certain cases, by special purchase from well-known firms, or finally through brokers. Whichever procedure is to be employed in each case is carefully laid down. As a rule, contracts are usually accepted on limited competition, owing to the probability of securing better quality. According to Hamilton, stringent rules and regulations exist for improving the system of selection of firms to be invited to tender. Great care is given to this question, so that as many firms as possible may be familiar with the needs of the Navy, and be encouraged to furnish themselves with the necessary plant for producing material and stores required for the Fleet. Hamilton further says that very carefully compiled rules exist, providing on the one hand, for the impartiality of those concerned with the selection of tenders, and on the other against impositions on the Exchequer. The Director of Contracts must also see that the "fair wages resolution," passed by Parliament on 13th February, 1891, is observed, under which it is necessary that every government contract contains the proviso that all workmen receive the rate of wages recognised as the normal.

The Director of Naval Contracts is not responsible for the quality of the Stores delivered on account of the contracts made by him. The testing of such supplies falls within the province of the departments and sections concerned. But precautions are taken that he may be able to keep himself acquainted with the quality and character of the supplies for the several purposes for which they are required. He can also at any time require the production of samples or patterns from the departments and sections concerned in order that he may take an opportunity of

testing them independently. He is further required constantly to inspect the sources of supply.

As a rule, the contracts are for the delivery of certain named quantities or numbers. But if they are so drawn out that delivery is to be on demand, then, as a rule, they are only made out for a year, and care must be taken that on the expiration of the first year, they may terminate on a three months' notice on either side. Usually this description of contract does not run for a longer period than 3 years without a fresh agreement.

The Director of Contracts as a rule deals in all that affects his business direct with the naval departments concerned, as well as with private firms. But all matters of special importance require ratification by the permanent secretary. In ordinary matters he is subordinate to the Financial Secretary and to those members of the Board for whose departments or sections contracts are to be made.

From the foregoing, then, the supplies for the whole of the British Navy, excepting ships, engines, and the principal requirements of construction, are centralized in one office. This system has been in existence since 1868-69, It is claimed for it that very shortly after its institution it was able to show what it could accomplish: after the raising of the siege of Paris, 2,500 tons of food were despatched from Deptford and the two other yards in three days for the revictualling of the starving city, without the slightest difficulty, the stock being made up again for the Navy through the working of the new department. The exceptions to the general system of centralization have repeatedly been the subject of searching inquiry, and efforts are constantly being made to do away with these exceptions, since frequent abuses have crept in and been exposed, especially in regard to the provision of machinery and items of construction. But here many important questions arise which have hitherto prevented any final solution of this question.

4. PAYMENTS, BUDGET, AND ACCOUNTS.

(a) THE SYSTEM IN GENERAL.

The passing and control of the Budget are in England solely in the hands of Parliament, and, further, in those of the Lower House. A Budget in the Continental sense—i.e., a legally drawn-up comparison of the income and expenditure of the State—is not known in English public law. The "Estimates" for the individual branches of the administration are merely calculations of expenditure, and the Appropriation Act, based on these calculations, only gives a statement of expenses, while any statement of revenue is wanting, this appearing in the so-called "Finance Act." The Finance Accounts, which are usually laid before Parliament not later than the 30th June, do contain a review of the revenue and expenses of each branch of the administration, but possess neither legal form nor legal force.

The passing of the law for the expenses of the State is accomplished as follows: on the 1st October of each year the Treasury invites the Accounting Officers of the different departments to draw up estimates for the administrative year. These should be sent in by the 1st December, but their submission is often delayed until the 1st January. In the Treasury these are worked up into the General Estimates of the State by the "Estimate Clerk." The wide financial control which the Treasury exercises over all departments of the Government, lends particular authority to its staff of permanent officials. In one form and another each item of expenditure must receive the sanction of the Treasury. Before, however, the detailed General Budget comes before him, the Chancellor of the Exchequer lays a rough draft before the Cabinet for approval, especially so far as concerns the requirements of the Army and Navy. The detailed Naval Estimates, and in the same way those of the Army, are not prepared by the Treasury, but each in its own department. Each branch of the administration then lays its detailed estimate before the Treasury for approval, which is as a rule accorded after a very summary examination or check.

Within the first ten days of the opening of the session of Parliament, the State Budget is introduced to the Lower House under four main headings—Navy, Army, Civil Service, and Revenue Department. But the Navy introduces its own estimates—not through the Chancellor of the Exchequer.

The House of Commons then examines the Estimates in "Committee of Supply." Each estimate has the total sum divided among "sub-heads," and these are distributed among "items." The estimates are discussed item by item, but, owing to the pressure of other business, especially towards the end of the Session, much of the Estimates is summarily despatched. In the resolutions of the Committee several items are often taken together.

By resolution of the Committee the "Appropriation Bill" is then brought before the House. In its outward form this consists (a) of the wording of the Act in a few paragraphs, and (b) of the "Grants of Supply," the granting of monies which in the Act, in the so-called Schedules, are more clearly specified as "Votes." The Bill goes through all the usual stages in the House—first and second reading, Committee, Report, and third reading. As soon as a Bill has passed the Lower House, it goes to the Upper, where within a minute, it passes through all three readings. On the same day it is returned to the House of Commons, is laid before the King, and receives the Royal Assent.

Each vote that is agreed to becomes an undisputed law of government, and must be strictly enforced. On the other hand, the individual items forming the basis of the accepted votes, although they should be accepted if possible, can be *transferred*

by the Government, so far as these items do not form an actual portion of the Appropriation Act. In this way the Navy, like the Army, has a peculiar and exceptional position. It can not only effect a transfer within the particular vote concerned, but within the *whole* Navy Vote which has been passed, and thus use the surplus under one vote to cover the deficit of another, so that, so far as the Navy is concerned, all votes are mutually transferable. But the total sum passed for the Department can under no circumstances be exceeded. Further, the power of effecting such transfers is only to be used in cases of special necessity with the concurrence of the Treasury, and only under the condition that Parliament is informed, and is afforded opportunity of taking exception to the irregularity. "Carrying over" from one administrative year to another is not permitted.

The Control over the funds voted on one account being used for another, rests with the Controller and Auditor General in connection with the Committee of Public Accounts, and finally with the Lower House itself. The Controller and Auditor General is the head of the Exchequer and Audit Department. He and his representative—the Assistant Controller General—are appointed in a judicial capacity for life with salaries paid out of the Consolidated Fund. Both are independent officials and entirely at the disposal of Parliament. The Controller and Auditor General and his representative exercise further the supreme financial control; and to this end have the right to examine the Bills of each and every department. The basis for the financial audit is the system of Appropriation Accounts provided by the Exchequer and Audit Department Act of 1866.

In every Department which is entrusted with the appropriation and expenditure of public funds, an official, with a sufficient staff, is entrusted with the conduct of the financial examination. There are no subordinate or intermediate officials for this purpose. The financial responsibility remains with a single official who belongs to the department actually concerned with the disbursement of the money.

The examination is concerned with the facts:—

(a) Whether the payments stated to have been made are correct and are supported by vouchers (Cash Audit).

(b) Whether the money allotted has been expended without exceeding the limits laid down by Parliament (Appropriation Audit).

For Naval, as well as for Army purposes, it is laid down that the so-called "Test Audit" shall suffice; that is to say, that in regard to (a) the check is carried out within these departments themselves—in the case of the Navy through the Accountant General and the Inspector of Dockyard Expense Accounts—except the bills for Naval Stores, which are checked by the

Controller and Auditor General in the case of the Navy and Army, as well as of all other departments of the State. Prior to the financial year 1905-6, it was customary to make a thorough check of 2 or 3 votes only of the Naval Budget, and a general examination of the whole. In this way in the course of a certain number of years a complete check was effected of the whole. But by the system introduced by the Appropriation Account of 1905-6 such items of expenditure as are of a routine character are subjected to a simple, rough check, leaving to the officials of the Audit Department the more particular examination of such items as seem to require a more searching revision.

The reports of the Auditor General on the Appropriation Accounts go to the Treasury, and are then laid before the House of Commons with any remarks for which they may seem to call.

Financial control by Parliament dates from modern times, for the Admiralty from 1832, for the remaining departments from 1866. Up to that date financial control by Parliament was a mere formality. In the proceedings of the Lower House in 1865 attention was drawn to the extraordinary contradiction between the great jealousy as to the maintenance of the exclusive right of the House of Commons to sanction expenditure, and the indifference with which the House handed over the amount voted to the unfettered control of the Government. Since that year, when Gladstone's "Exchequer and Audit Departments Act" was passed, the Lower House has retained the purse strings in its own hands, while about the same time (1860) the House of Lords was wholly relieved of any right of interference in money bills.

In the Lower House all reports go to the Committee of Public Accounts, which consists of eleven members. It sees that all money votes are expended according to law. It advises the House whether the account shall be passed or whether resolutions to the contrary shall be put forward. The check by the Committee of Public Accounts goes so far as to consider also the appropriateness of the various items of expenditure, and in this the Committee is guided by special experts who sit on the Committee, and are permanently concerned with their own particular subjects—Army, Navy, taxes, etc.—and who know thoroughly the views of the Committee about such matters. The Committee also specially checks all the agreements come to by the administration; it takes care that Government does not resign unnecessarily any state-title or claims, and that its interests in fiscal matters are not in even the smallest degree lost sight of.

The Committee also, of course, watches over the Estimates to see that they are not exceeded; thus, for instance, in 1908, it pointed out that it was wholly inexcusable that the portion of the Estimates concerned with pay was exceeded by nearly

£300,000, owing to the fact that a larger number of officers and men were on the establishment than Parliament had voted.

(b) THE NAVY IN PARTICULAR.

Within the limits above shown of the Budget and audit of all the administrative services, the preparation and drawing up of the Navy Estimates, the Budget control, and the whole financial business of the Navy is supervised by the Parliamentary and Financial Secretary. His special business is to subject all expenditure to a financial criticism, and thus, in a measure, force all heads of departments to defend any new measures they may have in view.

As a rule, he exercises his functions through his permanent representative and head assistant, the Accountant General of the Navy, a high official who, with several assistants and a large staff of subordinate officials, represents the Book-keeping Department of the Admiralty. There is also a Finance Committee, the Vice-president of which is the Accountant General.

The duties of the last-named official are as follows:—the preparation of the Navy Estimates; financial check of the naval expenditure; the keeping of the required books, registers, lists and vouchers; advisory, and to some extent, deciding powers in regard to transfers within the individual votes and between one and another; to see that only necessary expenditure is incurred, and that it is properly charged; the drawing up of the Chief naval accounts to be later laid before the Controller and Auditor General, and which form the ground work of his Navy appropriation Account; and advisory duties in all questions relating to Naval expenditure. He has to keep his Chief fully acquainted with everything concerning Estimates, monetary affairs, and audit of all branches of the administration affecting the Navy.

For the proper management of their own "Votes," the individual departments and sections are themselves solely responsible. In order, however, to lighten for them the supervision of their financial duties and expenditure, the Accountant General must place all possible material at the disposal of the several departments, so as to admit of a real control over their allotted expenditure. When there is any risk or likelihood of the expenditure on any one item being exceeded, he should warn the department concerned, and, if necessary, bring the circumstance to the notice of the Lords of the Admiralty. When expenditure has to be incurred which is not provided for in the Estimates, and before money is used for other purposes than those laid down, the views of the Accountant General must be heard. In his department each payment, every special account of the Paymaster, all unforeseen expenditure must be checked and laid before the Controller and Auditor General.

In addition to these more important duties, the Accountant General has also certain others connected with the Pay Audit.

For carrying out all these duties his department is divided into several groups and divisions, and these, again, into other sections. It contains the following:—

(a) "The Estimates Division" consists of the Ledger Branch, the Bill Section, the Estimates and Liabilities Branch, the Ships' Establishments Branch, and the Salary Branch, which latter, again, contains the Salary Section and the Pension Audit Section.

(b) "The Navy Pay Division" consists of the Full and Half Pay Branch, Seamens' Pay, etc., Branch, the Allotment Branch, and the Naval Pension Branch.

(c) Is the "Invoice and Claim Division."

The Navy Estimates are prepared in the Estimates and Liabilities Branch. The starting point for their preparation is the total sum which has been decided upon in the Cabinet as available for navy purposes. The ship-building programme is then adapted to this, and in conformity with it, and with existing requirements in regard to ships completed and building and works on land, the needs in *matériel* and *personnel* for the coming financial year are worked out, taking the expenditure of the previous year as a guide.

As soon as the different items of the Estimates have been worked out in the various departments, they are submitted, with copious explanations, to the Accountant General, who returns them, endorsed with his remarks or concurrence. When these remarks have been agreed to, or a decision on the matter given by the Board, a draft of the completed Estimates is printed, a copy handed to each member of the Board, and considered at a general sitting of the Board under the presidency of the First Lord, and in the presence of the Accountant General. By resolution, then, of the Board, or by the decision of the First Lord of the Admiralty, the Estimates are now ready for final printing and for laying before Parliament.

With regard to the significance of the signatures of members of the Board to the Estimates, a paragraph in "The Naval and Military Record" of 1899 is of interest: "Recently we have had an admission from the First Lord that no special significance can be attached to the fact that all the members of the Admiralty sign the Estimates. The signatures attached to the Estimates during the past thirty years afforded the country no guarantee that the members of the Board are content with the provision of money for the Fleet. The signatures simply mean that the money asked for has been laid out to the best advantage."

Expenses required in advance for naval purposes can be drawn from the "Treasury Chest Fund." This fund was established under 40 and 41 Vic. C. 45 and 56 and 57

Vic. C. 18, with a capital not less than £700,000, and not exceeding one million, to meet advances for special cases, particularly those arising abroad.

PART III.

COMPARISONS.

In comparing the organization of the British and German Admiralty, the fact that most strikes one is that the head of the English Admiralty is a man who is not a specialist. In this connection attention is drawn to what has already been said about the peculiarity of the Parliamentary and party conditions which govern this state of affairs. A further difference lies therein that the mission and powers of the British Admiralty are far more extensive than with us. They embrace not merely the whole administration, but also the chief command of the navy and the efficiency of the staff of admirals. They further cover the powers imposed by the Order of 30th March, 1889, on the German Admiralty. For, while this was the supreme court of administration and command, it was still in regard to military affairs placed under the Emperor's orders, as was also later the High Command of the Navy, and as is to-day, the Naval Cabinet and Admiralty staff; it possesses, therefore, neither the same elasticity nor the same powers as the British Admiralty. In administrative affairs, too, the latter has greater freedom of action than has the German Admiralty. It is true that, as already stated, while in the German Empire there is a Chancellor over the Secretary of State, so in England the Cabinet is over the First Lord of the Admiralty; but the First Lord, when particular cases call for special action, is not tied down to regulation to the same extent as in Germany, so long as he is "backed" by the Cabinet—in other words, by the Prime Minister. This results from the English party system, and from the consequences—described in Part I., Sec. 3—connected with the responsibility of the individual departments. So long as the Premier enjoys its confidence, the governing party in the Lower House will invariably support any action of the Admiralty in which the Prime Minister has concurred.

The Board system of Government, which at first sight strikes a German student of the English Admiralty organization as strange and old-fashioned, does not actually represent any very material difference from German conditions. The system is one purely of outward form. The interior character of organization and method of conducting business is of a bureaucratic nature, and scarcely differs from the German organization of similar scope, so far as can be judged purely from Parliamentary papers and without personal knowledge

of the matter. Certainly there is a variation in that many matters, which in German Navy administration fall to provincial officials, in England are attended to in the Admiralty, since in the English Navy administration there are just as few intermediate officials—in the meaning of the term in the German admiralty—as there are in any of the other branches of the British Administration. This necessitates a very vast degree of centralisation, wherein the British form of Government, and especially the British Admiralty administration, differs very widely from the German, where the system of decentralisation prevails, and is to be carried out to an even greater degree.

The British Admiralty is centralised, from an administrative point of view, so far as concerns the following: Supplies, stores, medical, shore works, shipbuilding, movements, settlement and check of accounts, and, further, to a very wide extent, pay and cash audit. In all these matters the Admiralty embraces what in the German Navy Administration falls to the officials of the Construction and Torpedo Department, Depôt Inspection, Fortifications, to the commissaries and their subordinate officials (victualling agents, garrison administrations, dockyard departments, hospital and clothing offices).

From the existing centralisation arise the differences in those very matters which form the foundation of the administration, and are therefore of importance for the whole Navy—namely, in the Estimates and in the Accounts. The preparation of the Estimates is carried out in the British Navy in much the same way as in the German. In England, as with us in Germany, the requirements for the new Budget year are ascertained at certain periods during the twelvemonths, based on experience of previous charges and on the necessary alterations consequent on the increase or diminishing of requirements, or on existing arrangements or organization. This method of gauging requirements is, in consequence of the different organization of the British Admiralty, far more centralised than it is in Germany. The work of the Budget Department of the German Admiralty corresponds to that carried out in the British Admiralty by the Accountant General of the Navy in the Estimates Division. In the English Estimates, as in the German, supplementary estimates are added to the ordinary Budget.

Unlike the system in use in Germany, the check or audit, through the Treasury, of the Estimates prepared by the English Admiralty, is only a very summary one. On the other hand, the British Treasury interferes in the details of the financial administration of the Navy, as of other departments; it lays down stringent regulations for the conduct of expenditure and for financial administration, and these can only be set aside with the distinct sanction of the Treasury. Such a close co-operation is not

shared in Germany by the Treasury, for the carrying out of the methods whereby the Estimates are endorsed. The administrative action of the German Treasury in the ratification of the Budget is limited. As a general rule, the action of the German Financial Administration in the preparation of the Special Budget is confined to the administrative matters actually concerned with it. The influence of the financial administration is restricted (so far as concerns the economy of individual departments) to co-operation in the sale of Government land, with the acceptance of liabilities, the carrying out of modifications requiring the expenditure of money, with the monthly regulation of grants for occasional expenditure, with Budget over-drafts or extraordinary payments, and finally with the drawing up of the Imperial Budget.

An important difference between the financial conduct of the British Navy administration, as compared with the German, is that the former, in combination with the Treasury, has in regard to its own estimates the most complete liberty of action, so long as any surplus from one financial year is not carried forward into another.

In regard to payments, the Bank of England corresponds to the *Reichshauptkasse* of the *Reichsbank*. The Commissaries in Germany are represented in England by the Paymaster General, the Assistant Paymaster General, and by, so far as the Navy is concerned, the Accountant General of the Navy (Pay Division).

The control over the progress of expenditure of the different items of the Estimates, which in the German Navy chiefly falls to the commissaries and dockyards, in England rests wholly with the Admiralty through the Accountant General of the Navy (Estimates Division, Ledger Branch), and the Inspector of Dockyard Expense Accounts, under supervision of the Treasury. For German purposes the duties of these last three may, in this respect, be compared to those of the Estimates Department of the Imperial Admiralty and of the Imperial Finance administration.

"The Finance Account of the United Kingdom," etc., which includes the Navy, and which the Treasury annually lays before the House of Commons, corresponds to the "Review" of Imperial Expenditure and Revenue, which is every year prepared in Germany by the Imperial Treasury.

In two important particulars, whereby the expenditure of the money voted for the Navy is controlled, there is a great difference between the English and the German procedure. In the English Navy Administration, for each portion of the business of audit, concerned with the formal check of expenditure, there is only one final audit, and this, as has already been explained, is conducted entirely within the Admiralty. The other difference is a consequence of the absence of intermediate officials; what is done in the German Navy in the way of audit

by the Commissaries, is carried out in England by the final test audit.

In other matters the duties of the Controller and Auditor General and of the numerous staff of officials attached to his office, correspond to those of the *Rechnungshof* of the German Empire; and in the same manner that the German Reichstag receives, from the "general account" laid before it by the *Rechnungshof*, information of the result of the audit by the *Rechnungs Commission*, and passes thereon a resolution, so does the English House of Commons receive from the Controller and Auditor General annual reports, by means of the Appropriation Accounts, which are considered in the Committee of Public Accounts, and presented to the House to be passed.

PART IV.

COMMENTS.

The passing of the Imperial Defence Act of 1888 and the Naval Defence Act of 1889, prove that, from the English point of view, the Admiralty, as now constructed, is fully competent to perform the duties of so great an organization, and achieve, smoothly and rapidly, good work by division of labour and unity in direction.

Hamilton says in the book from which many quotations have been made:—"Englishmen may certainly congratulate themselves . . . upon the possession of an organization which provides for the Empire a Navy that is cheaper and more efficient than any other in the world," And in another paragraph:—"That our Navy is the admiration of the world, both for the character which it possesses, and the economy and rapidity with which ships are built, is sufficient evidence that the money is well expended." In his view the dominant character of the conduct of Admiralty administration is the flexibility of its working, since the members of the Board are not, in a rigid sense, heads of departments, but are in direct and constant communication with the First Lord of the Admiralty and with one another.

The Royal Commission of "Civil Establishments" said in its report on the Admiralty system that "this organization secures a proper relation between the executive and civil functions, and, in this respect the Admiralty Board is a model to be copied." The system tends to a proper understanding between the head and his subordinates, it fosters personal responsibility, and it leads to the simplification of work and reduction of unnecessary correspondence. That the correspondence attains an enormous bulk will be seen when it is stated that, when in the "Nineties," some documents were removed

which had accumulated during forty years, their weight was found to amount to one hundred and fifty tons!

There is now no longer any mention of such complaints as were often made prior to the reorganization of 1832. Formerly pay and supply accounts remained for years unaudited. At the end of 1805 the uncovered advances amounted to over eleven millions, and the Admiralty was not the only defaulter. In the year 1906 the Chancellor of the Exchequer complained that in old days expenditure amounting to over 450 millions remained unaudited.

If the Navy Administration has been spared in modern times reproaches of the above character, its organization has still not wanted for detractors and critics. A former First Lord, who held this post for sixteen months, and who had previously occupied other high appointments, stated before the Commission of 1861 :—"I believe that the system of Admiralty Administration is not satisfactory. I never felt, when in the Admiralty, that I had either the knowledge, the power or the responsibility, which, in my opinion, a Minister should possess who is placed at the head of so great a department." A Parliamentary Committee on military organization in 1861 declared that "the motive power of colleagues is known to be complicated and uncertain." Even sharper criticism is made use of in a *brochure* of 1866—"Admiralty Reform," by Admiral Sir R. Spencer Robinson, and in the oft-quoted article, "A Retrograde Admiralty" in *Blackwood's Magazine* for 1905.

On the whole, however, the different critics are less outspoken against the actual organization and against its mechanical power, than against the want of agreement in the wording of the documents forming the groundwork of the organization itself. On the whole, however, the system may be considered to be a good and workable one, and it must be said for it that it enables the British Naval policy and administration to be shaped after the axiom laid down for the defence of the British realms by that King Offa who died in 796—"that he who would be secure on land must be supreme at sea."

THE LAND DEFENCE OF COAST BATTERIES AND FORTRESSES.

By Major C. G. VEREKER, R.A.

IMPORTANCE OF THE SUBJECT.

THE rapid growth of foreign naval Powers, and the regrouping of our own fleets to meet present-day conditions, will render it more and more improbable that, in the initial stages of a war, we shall be able to retain unchallenged command of the sea in all parts of the world.

Until such time as the great naval battles which will eventually decide our fate have been fought, our fortresses and coaling stations, at all events those in distant parts, will have to look after themselves, possibly for much longer periods than was formerly considered probable. Our Navy should be in no way fettered with the responsibility for the safety of ports, but should be confident of finding dockyards, coal and stores available at any time, whenever the strategical requirements of a war may necessitate the presence of our ships.

An enemy, on the other hand, may be more than ever in a position to carry out a successful attack upon some distant station, and such an attack will offer considerable temptation, as, by the destruction of coal stores and repairing facilities, the movements and efficiency of our fleets might be very seriously interfered with. The importance of Coast Defence, is therefore tending to increase at the present time, and some consideration as to the protection from the land side of coast batteries and fortresses may not be out of place.

RESPONSIBILITY OF INFANTRY FOR THE DEFENCE OF LAND FRONTS.

This land defence, which is of vital importance, as we shall endeavour to show, should be carefully thought about, and studied, especially by our infantry, who in time of war become mainly responsible for the safety of coast works, and may then have to perform duties in many respects different from what they have become accustomed to, by their training in the field.

"As a rule infantry will be detailed in defence schemes for the protection of all batteries and electric light emplacements liable to attack by raiding parties, and will supply patrols for the early detection of such raids.

"Gunners are in no way intended to perform the duties of protection, but, if not occupied in fighting their guns, will be expected to assist the Infantry in resisting an attack on the rear of the work, except with anti-torpedo boat guns, which may have to be manned at a moments notice." [1]

[1] Garrison Artillery Training, Vol. I.

INCREASED VULNERABILITY OF COAST DEFENCE ARMAMENT.

During the past few years greater importance has been placed upon the adequate protection of batteries than was formerly the case. One reason for this is the very greatly diminished number of guns supplied for coast protection and their greater vulnerability to destruction by individuals or small raiding parties gaining access to a work.

In the days of muzzle-loaders a fort was armed with a considerable number of guns on very simple mountings, which it was difficult to damage effectually, and which, even if damaged, allowed of repairs or of makeshifts being employed, so that guns could continue in action. Now, on the contrary, the defence of a harbour entrance may in some cases depend on very few guns, on mountings which are particularly vulnerable below the shield, and which, if once damaged, would be very difficult, and take a long time, to repair.

Then, again, whereas formerly guns were enclosed in strong casemated forts, and could not as a rule be silenced from the land side unless the fort was first assaulted and captured, they are now usually placed in open barbette batteries, which may be exposed from the flank or rear to rifle fire from an enemy occupying commanding ground within range of the guns. There are also nowadays electric lights, position-finding cells, and communications, all important adjuncts of a successful defence, which are particularly tempting objectives to raiders, and the destruction of which, though not necessarily destroying the effectiveness of the defence, may seriously hamper it should vessels attack at the same time.

Yet, in spite of the very great disadvantages under which an attack on coast works from the land side had to take place in the past, as compared with the present, we find on examination of historical examples that, in almost every case of the successful silencing of coast works, this has been effected from the land side, and not by the fire of ships' guns.

COMBINED ATTACKS BY SHIPS AND LANDING PARTIES.

The best results have been obtained by combined attacks by ships and landing parties, but the latter have in nearly every case been mainly responsible for the capture of the work or of the place attacked.

The capture of Fort Fisher illustrates this very well. During the American War a large fleet went in to attack it, and opened a very heavy fire upon it, but the fort made little reply.

"Part of the reason of that was that the garrison considered that it was not of much use sinking a ship, or two or ten ships, because there were an almost unlimited number of ships in the north, and what the garrison wished to reserve themselves for was the attack by the land force. They beat off the land force on the first assault, and it was only on the second assault that the place fell."[1]

[1] "Naval Attack of Fortifications," by Admiral May, R.N.

As more modern examples, we have the capture of Port Arthur and of Wei-hai-Wei by the Japanese, in 1894, and of Santiago by the Americans, in 1893. In each case, though the attackers were practically in absolute command of the sea, no serious attempt was made to take the forts by bombardment, but an army was landed, and the works were captured from the rear.

Still more recently we have the capture of Port Arthur by the Japanese. The majority of the Russian vessels had been seriously damaged, the free exit from the port of the remainder was to a great extent blocked, and there was at one time probably no force to cope with the Japanese fleet except the still distant Baltic squadron; yet practically no attempt was made to attack the coast defences, and finally crush the fleet they were protecting, except by a distant bombardment from a position out of reach of the Russian guns.

The risk of approaching too close was exemplified by the loss of the *Hatsuse* and *Yoshima* on the same day through striking mines placed off the fortress; this disaster went near to seriously imperilling the Japanese command of the sea, and thereafter the Navy was content to play a waiting game while the defences were slowly but surely attacked and taken from the land side.

SPECIAL POSITION OF THE UNITED KINGDOM.

In considering the subject of land attack, there is one point which is very often overlooked—namely, that we are in an absolutely different position from any other nation in the matter of coast defence, for we are, presumably, only exposed to attack during a comparatively limited time, and if we can hold out long enough, a relieving fleet is bound to come to our rescue. If we have so entirely lost command of the sea as to possess no relieving fleet, the game is up, as, sooner or later, the British Isles must be starved into submission, and our colonies, coaling stations, etc., must fall in due course, and no amount of resistance will affect the ultimate end. We must, therefore, assume that the existence of our fleet is vital to our existence as a nation, and need only consider attacks during local or temporary loss of command of the sea.

It is improbable that an enemy will, under these circumstances, undertake a regular bombardment of coast forts, and risk damaging his ships and exhausting his ammunition, with the possibility of having to fight a naval action subsequently, nor will he have time to collect and land a large force and undertake a regular siege; but, on the other hand, he will be very much tempted to try and take certain of our coaling stations and coast fortresses by a *coup de main*, probably with a view to destruction only, and for this purpose he will employ a land force, which must of necessity be comparatively small, and is not likely to have any guns heavier than those which can be landed in boats.

These attacks will all, more or less, partake of the nature of a raid, and their success will depend upon rapidity of action and surprise.

RAIDS BY TORPEDO CRAFT.

The most probable form of raid will be an attempt by torpedo craft to penetrate the defences with a view to the destruction of ships-of-war lying within. Attacks of this nature may possibly be delivered before a declaration of war; this liability, therefore, imposes on the garrison of a port the necessity for great vigilance at a time of political tension. The nearer a port to the enemy's bases, the more liable it is to this danger, but ports out of range of sea-going boats are still liable to attack by smaller types carried or towed by battleships or cruisers. The loss of even several torpedo vessels would be amply compensated by the great damage others could do, should they succeed in running past our defences, and we may take it for granted that the enemy would endeavour by every means in its power to assist the attack.

Landing Party in Co-operation with Torpedo Boat Attack.

This assistance can obviously be best given by a force acting in rear of the defences, and either silencing or worrying the quick-firing guns by enfilade or reverse fire, or destroying the electric lights upon which we are dependent for successfully repelling a night attack. Under cover of darkness it should not be difficult for a resourceful enemy to put a small party ashore unobserved, and, if these succeed in getting through the troops protecting the land side, they may be able to do great mischief, will, in any case, unsettle the defenders, and in the resulting confusion, will have a very good chance of escaping.

Secret Agents.

Or, again, secret agents might be employed with orders to destroy lights at a given time or on a given signal. The existence of such secret agents is not always taken very seriously, but it is desirable that we should be on our guard against them, especially when we remember that many of our coast fortresses abroad are situated in places which contain a very considerable number of aliens, who are continually coming and going, and the movements of whom could not be effectually watched, even by the best police in the world. A few well-paid agents, provided with bombs or guncotton, wherewith to destroy electric lights or engine rooms, or who succeeded in unearthing and cutting the cables joining these, might very materially assist a raid by torpedo craft For the protection of electric lights we are dependent upon infantry who should be able to ensure that no unauthorised persons approach within bomb-

throwing distance of any of the projectors or gain access to the engine-rooms.

Vulnerability of Exposed Batteries.

If the quick-firing guns are open to rifle fire from the rear, we must likewise depend upon infantry to watch all commanding ground, and prevent its occupation by raiding parties who may have effected a landing unnoticed. An enemy succeeding in taking up a position within 1,000 yards of an exposed battery at night could practically silence its fire; the flash of the guns would show up the detachments to him, and the demoralising effect of rifle fire arriving from the rear would be sufficient to make accurate laying at a fast-moving torpedo boat very problematical.

The obvious remedy for such a contingency is to watch the coast line so as to prevent raiders landing, and to so guard the approaches to batteries that raiders may be intercepted, even should they successfully elude the vigilance of those watching the coast.

RAIDS AGAINST DOCKYARDS AND STORES.

Next to a raid by torpedo craft, the form of attack coast fortresses abroad may most have to fear, is one having as its object the destruction of a dockyard or of the coal and stores kept in reserve for our fleet. Such a raid would only be undertaken if an enemy was in temporary local command of the sea, and, for reasons already mentioned, his object would probably be to complete the work of destruction and re-embark as quickly as possible, and before the arrival of a relieving fleet. He would, therefore, desire to effect a disembarkation at the nearest convenient distance from his objective. We may, however, take it that any good landing places in the immediate vicinity of a dockyard, although possibly not under the fire of the main batteries, would be protected by the fire of fixed armament guns.

Alternative Methods of Attack.

The enemy, therefore, has the alternative of risking some of his ships in silencing coast works in order to obtain a suitable base fairly close to his objective, or of effecting a landing at some more distant point, and advancing overland to the attack, as, for example, the Japanese did in the case of Port Arthur.

Should he select the former alternative, he would endeavour by every means in his power to silence, or render as ineffective as possible, the fire of the guns commanding the point selected as his base, without exposing his ships to more damage than necessary. The means employed to effect this might be:—

(a) To destroy guns or blow up magazines by means of secret agents or small landing parties effecting an entrance into the work.

(b) To destroy position-finding cells and to cut communications by the same agency, in order to hamper the defence, and to render long-range fire more inaccurate.

(c) To put a small force ashore during dark with orders to take up a position on ground commanding the guns from the rear, and to pick off the gun detachments and battery commander and staff as the ships attack at dawn.

To meet the above, very carefully thought-out plans of defence are necessary. All probable landing places must, of course, be guarded by infantry, but as, however good the watch kept, a resourceful enemy is pretty sure to succeed in putting men ashore at some point or other undetected, we cannot altogether trust to this first line of defence, and must take steps for the closer protection of individual works.

Necessary Defence Measures.

The details of defence necessary to guard against the above forms of attack are briefly as follows:—

(a) Modern mountings are usually very vulnerable behind the shields. A slab of guncotton or charge of high explosive detonated at a suitable point could more effectually silence a gun than hours of bombardment by ships. Magazines stocked with cordite are no longer so easily exploded as in the time of Guy Fawkes, and more elaborate arrangements are necessary nowadays. It is, however, obviously as well not to allow anyone to exert his ingenuity in this direction!

To prevent the entry of unauthorised persons into batteries infantry guards are required, whose duty it should be to watch and patrol the approaches; the batteries themselves, if situated in old pattern forts, are usually surrounded by deep ditches, but some modern ones may have only so-called "unclimbable" fences, which—as no fence has yet been invented which will stop a good climber provided with the necessary easily carried articles for surmounting it—should be further supplemented by barbed wire entanglements.

The artillery should find sentries on guns and magazines, so that even should the infantry outposts and the obstacles be passed, the attackers may be discovered and stopped.

The essence of effectual protection against such attacks is, however, an offensive defensive, and we should not be satisfied to sit down near the guns, and wait for the enemy to come and attack them.

(b) Position-finding cells should be sufficiently protected by a small guard of infantry, as the value of their destruction would not be sufficient for the attackers to risk losing several men in an attempt to do so.

Communications are liable to be interfered with, either through the cutting or short-circuiting of air-lines, or the cutting of cables. As such damage would probably be carried out by individuals during the hours of darkness, it is very difficult to guard against; good patrolling and the prevention of movements of all unauthorised persons at night are the only means available. Such damage would, however, usually only affect the defence temporarily.

(c) If "snipers" can be put ashore at night, and can get within range of open works, their fire at dawn would have a most demoralising effect on the gunners; by the time they were discovered and dislodged by the defending infantry it is probable that the enemy's ships would have effected their object of closing with the work, when—with their great preponderance of armament—they might silence it at close range.

It is therefore important that all possible protection against such fire from the rear should be afforded by means of parados and other cover; and that, if the battery is commanded by any high ground, such ground should be carefully patrolled and searched by infantry a little before dawn to prevent the possibility of its being occupied by the enemy.

The difficulty of getting away again, is, however, likely to prove the best deterrent against such attempts, as, should the enemy fail to effect a landing in force, the fate of the "snipers" would be sealed, for they could usually be hunted down and captured during daylight.

Measures for opposing a Disembarkation.

Should the enemy succeed, by fair means or foul play, in silencing the fire of fixed armament guns bearing upon the point selected for disembarkation, or should he select a point out of reach of the fire of the fixed armament, we have to depend upon infantry, supported by guns of the movable armament, to prevent a disembarkation, if possible, and, failing this, to hold such positions as will delay the enemy's advance and prevent him from effecting his object of reaching the dockyard or attacking the coast batteries from the rear.

As it is probable that an attempt would be made to put an advanced party ashore, and to capture a covering position during dark, movable searchlights at all the most probable landing places are very desirable, and infantry and maxims, supported by guns of the movable armament, should be available to oppose a landing, and to prevent the enemy from obtaining a footing on shore until such time as the local reserves—which should be kept in hand ready to move at short notice to any threatened point—can be brought up.

Guns of The Movable Armament.

Some of the movable armament guns would probably, on mobilization, occupy positions commanding landing-places, and,

if an enemy were aware, through his spies, that guns were so emplaced, and that they covered his prospective point of disembarkation, he might endeavour to destroy them by small raiding parties during the night prior to, or in combination with, the landing of his covering force. To prevent such an attack from succeeding, guns in exposed positions should be protected by barbed wire or other obstacles, and should have an infantry escort detailed for their protection.

The guns should not be placed too near the shore, even at night, as they can do their work just as well some distance back, where they are less likely to be rushed, and are able to assist in holding a defensive position should the enemy succeed in landing an attacking force.

The landing of an enemy's force and its subsequent advance would, in all probability, be supported by the fire of ships; this fact must not be lost sight of in selecting positions for movable armament guns, and in determining how they are most likely to be employed, The heavier guns might have to take up indirect fire positions from which to engage an enemy's transports or supporting ships; but, if they are required to fire direct, they should be most carefully screened and protected, especially on the seaward flank. The lighter guns—the targets of which would be troops disembarking in boats, or infantry advancing—would usually have to fire direct, and should trust to concealment and good entrenching in order to offer as difficult a target as possible to the enemy's ships; it might, in some cases, be advisable not to disclose their position until a good target—such as troops landing in boats—offered itself for attack by rapid shrapnel fire.

Should the enemy succeed in effecting a landing and securely establishing himself on shore, the checking of his advance and the taking up of successive positions—should a retirement become necessary—does not differ in the case of a coast fortress from similar work in the field, with the exception that advanced coast batteries or forts may sometimes serve as defended points in the case of a retirement; they should, therefore, be made as impregnable from the land side as modern fortification can make them.

The question of the land defence of coast batteries and fortresses is one that must be seriously considered during peace, and too much should not be left to be thought out and done upon mobilization. It is only by attention to what may appear, at the time, trifling and unimportant details, that "regrettable incidents" are avoided when it comes to actual fighting.

The following article is, by agreement with the Society for Nautical Research, reproduced from the April number of "The Mariner's Mirror."

GAFF-TOPSAILS.

By S. Goodwin.

ONE is constantly hearing disputes as to what name should rightly be applied to the different sorts of gaff-topsails, but it seems to be a rare event for any decision to be come to in the matter. The difficulty here, as in so many matters of nautical interest, probably is that the names have never been standardised, or even that there are not enough names to go round among the many forms of this sail which have at one time or another been used. What follows is based partly on personal experience and observation, partly on information acquired from pictures and books, and partly on what I have been able to learn from sailor men, old and young, of all descriptions, and from many ports.

Definition.— A gaff-topsail is a fore and aft sail set above a gaff and having its sheet led to the gaff.

This definition will seem unnecessary to most readers, who may probably think that there could be no doubt about so simple a matter. It will be seen, however, that it excludes one or two sorts of fore and aft topsails which are sometimes loosely spoken of as gaff-topsails, but have no right to the name. Chief among these are the topsails of Thames spritsail barges, and topsails set by luggers.

The gaff dates back to about the end of the 16th century, but no fore and aft topsail seems to have been set above it till towards the end of the 18th century. In the 16th century, however, various attempts seem to have been made by big ships to devise a mizzen topsail, that is to say, a fore and aft topsail set above the lateen mizzen. The attempts appear to have met with very poor success, and soon after 1600 the square mizzen topsail came into fashion for ships. Long before this it had been adopted for spritsail rigged craft; and when the gaff came in for hoys and yachts they too used the square topsail.

Fore and aft rigged vessels of all types (save only the lugger, which is probably no older than the gaff-topsail) used square topsails till about 1800. In 1775, or soon after, the gaff-topsail began to come in as a save-all, seemingly in big ships first; but it was not till after 1800 that any kind of craft got rid of the square topsail and trusted to a gaff-topsail alone. Probably the formation of the R.Y.S. and the experiments of its members had a good deal to do with this development; but that point is interesting and obscure enough to form a fit subject for a separate enquiry.

The square topsail died hard. It was common till the thirties of last century, and traces of it still survive. I myself remember seeing, in 1898, a schooner set a square main topsail flying; and to this day it is not uncommon to see a coasting

ketch with a square main topsail, even if it be only a middle topsail.

I do not wish to attempt a history of gaff-topsails, but propose merely to give a series of rough drawings of the different types which are in use, or have been used, adding a note as to the name of each. Other fore and aft topsails are also illustrated, as being closely akin to the gaff-topsail.

The simplest, and oldest, form is (1) the *jib-headed* topsail (Fig. 1). This is set without a topsail yard, and its luff is kept to the mast by hoops, by a lacing, or by one or two jackstays. It is most commonly set on a topmast, but occasionally on a long-headed pole mast (Fig 2). In a few cases what is essentially the same thing is set on the stump head of a lower mast. The fine Dutch pilot schooners which ply down to Dungeness have stump foremasts, but occasionally set fore-topsails of this kind; and in the April number of the *Yachting Monthly* is a drawing of a Japanese schooner with two such topsails set (Fig. 3).

Sometimes the term *thimble-headed,* which explains itself, is used instead of jib-headed. There is nothing to prevent a jib-headed topsail being set with a jackyard (Fig. 4), but I do not remember to have seen this done.

When a gaff-topsail has its head, or part or the whole of its luff, laced to a yard, the yard is called generically the *topsail yard;* or, if it be necessary to distinguish it from the yard of a square topsail (as in a schooner), then it is the *gaff-topsail yard.* There are many forms of topsails set with a yard; they may be set on a topmast (Fig. 5); or on a pole mast (Fig. 6); they may have luff and head in one and the yard vertical (Fig. 6), or have the yard somewhat square (Fig. 5), making a distinct head to the sail. There may be or may not be a jackyard in addition. But in all cases the yard is properly called the topsail or gaff-topsail yard. I have heard the yard in Fig. 6 called a *jackyard,* a term which might no doubt be etymologically justified; but everyone I have consulted about this spurns the notion, chiefly on the ground that the term jackyard has another meaning which is in general use, and that to apply it to the yard in Fig. 6 would breed confusion. This is true.

The *Jackyard* is a small spar laced to the after-part of the foot of a gaff-topsail, thus allowing the clue of the topsail to be extended beyond the peak of the gaff (Figs. 4 and 7.) Of course, a jackyard topsail can be set as easily on a pole mast as on a topmast. In America the jackyard is termed the *club.* Occasionally in England, especially on the East Coast, one

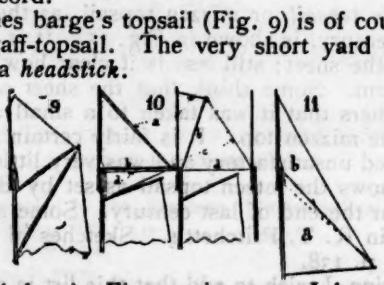
hears the jackyard called the *Jenny* yard, but the term seems neither necessary nor desirable.

Balloon topsails (Fig. 8) have gone out of fashion. They were racing topsails which would not stand well on a wind, and went out when the jackyard was introduced. I do not know whence the jackyard was borrowed, but it was occasionally used by clipper-ships in the middle of last century to spread the foot of their lower studding sails. I think these terms include all the kinds of gaff-topsails commonly set in fore and afters; but a few alternative names applied to them deserve mention. Thus, a racing yacht commonly has more than one jackyard topsail, and naturally distinguishes the sails, and the spars they are set with, by numbers; but this does not alter the names employed. Other terms which sometimes prove confusing are *working topsail* and *big topsail*.

A *working topsail* is a sail which can be carried on a wind in a fresh breeze. Thus, one yacht's working topsail may be a jib-header; another's may have a yard (Figs. 5 and 6). Logically a No. 2 jackyarder might be called a working topsail, but it is not so called, because it possesses a more definite name.

So with a *big topsail*. If a vessel has two topsails, a jib-header and another, the bigger one is often spoken of as the big topsail. If, however, the big topsail is set with a jackyard, it is called a jackyarder, that term being more precise. The result of this is that the term *big topsail* is usually applied to a sail as shown in Fig. 5, whether the yard be oblique or vertical. For the rest I attempt no explanation of names, but give a bare record.

The Thames barge's topsail (Fig. 9) is of course not properly called a gaff-topsail. The very short yard with which it is set is called a *headstick*.



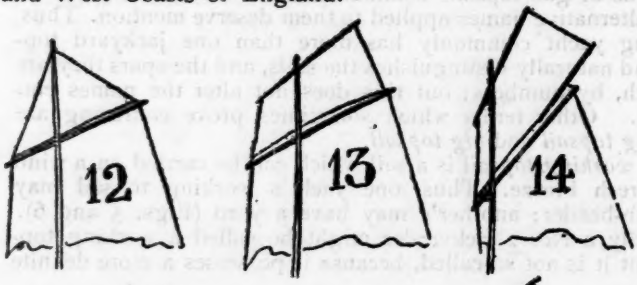
The sail shown in Fig. 10 is rare. I have only seen it in the four-masted barquentine "Sound of Jura," and do not

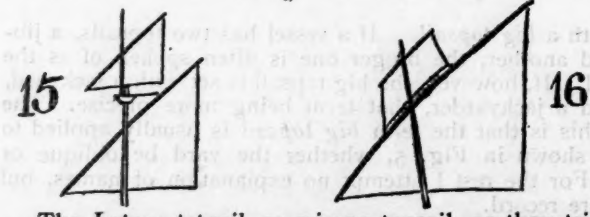
know if it has a special name. In this case *a* is the topsail boom topping lift, *b* the topsail boom, *c* the topsail sheet working to the cap of the mast next abaft, and *d* the triatic stay. It will be seen that this is not strictly speaking a gaff-topsail at all. As far as size goes it compares well with a jackyarder.

Barques, of course, often have their gaff-topsail in two pieces, the lower part being like Fig. 3, and the upper part serving to complete the normal jib-headed sail as seen in Fig. 1. But they do not always set both pieces at once.

Fig. 11 is, I suspect, a "lash up," though it is occasionally seen in coasters. In this, *a* is a jib-headed trysail, and *b* a topsail sheeted to the end of the boom.

Figs. 12, 13 and 14 show the ordinary forms of lugger topsails. Figs. 12 and 13 are still used by the French; Fig. 14 is in common use for luggers' mizzen topsails on the South and West Coasts of England.





The *Lateen topsail*, or mizzen topsail, as they tried to set it in the 16th century, is shown in Fig. 15. It is not clear what they did with the sheet; still less is it clear how they steadied the foreyard arm. Some think that the sheet was led to the yard below, others that it was taken to a small outrigger projecting from the mizzen top. It is fairly certain that this form of topsail proved unsatisfactory and was very little used.

Fig. 16 shows the lateen topsail as set by Bombay dhow-rigged racers at the end of last century. Some account of this will be found in R. T. Pritchett's "Sketches of Shipping and Craft" (1899), p. 138.

In conclusion, I wish to add that this list is not complete—if only owing to the limitations of space. There is no reason why someone else should not add to it.

THE VALUE OF THE *ARME BLANCHE*, WITH ILLUSTRATIONS FROM THE RECENT CAMPAIGN.

By Captain T. Seki, of the Japanese Infantry; (one of the three best essays in the 17th prize competition on the above subject).

Translated from Nos. 414 and 415 (July, 1910), of the Officers' Club Magazine, by Captain F. S. G. Piggott, R.E.

WORKS CONSULTED.

"Infantry Training." Pamphlet giving reasons for the changes in the new edition of "Infantry Training." Instructions of the Director of Military Education and Training, concerning the changes in "Infantry Training." "Field Service Regulations" of the British Army. "Infantry Training" of the German Army. Appendix to "Lessons on Tactics" used at the Officers' School of the Japanese Army. "Lectures on the Russo-Japanese War," by Lieutenant-Colonel Suzuki. "Lectures on Tactics" by Lieutenant-Colonel Uchino. "Fundamental Tactics" by General Meckel. "Officers' Club Magazine." "Guide to Military Science." "Heiji-kai" (The Military World). "Gunji Shimpo" (The Military Magazine). "Bushido" by Professors Shigeno and Kusaka. "The Japanese Empire" by Mr. T. Kimura.

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CHAPTER I.

INTRODUCTION.

(A.) The use of weapons from a social and a tactical point of view.

WHEN living creatures first appeared on this planet, they were given by Nature certain weapons, and the faculty of using these means of defence, so as to enable them to live in safety. The claws and tusks of animals, feathers and wings of birds, shells, feelers and teeth of fishes and insects, are all weapons given by the Creator to these creatures for purposes of defence. The white fur of arctic animals who pass their life in the snow, the green plumage of tropical birds who live in woods and forests always green, the green bodies of insects born in summer, and the yellow bodies of those born in autumn, are all dispensations of Heaven for the protection of these creatures; for, their furs, feathers, and bodies, being of a similar colour to their surroundings, they are not easily detected.

Means of protection being thus given by the Creator to birds, animals, insects and fishes, how much more were they necessary to man, the Lord of Creation? His nails, his teeth, the strength of his arms, and the speed of his legs, were his defensive weapons; and to these were added unlimited mental capacity. In pre-historic times man used only his arms and legs as a means of defence; but as his intellect developed and he became more civilized, he invented and used a great variety of weapons. To resist an enemy who wishes to do one an injury, and to protect oneself by overthrowing him, is termed fighting. When fighting occurs on a large scale, for the maintenance of one's country, it is called war, and the instruments that are used to make war are termed weapons, or arms. When arms are employed by a number of people, it is necessary to select a convenient site, and to choose a suitable formation; so we may say that a battle is composed of the three elements—weapons, configuration of ground, and formation of troops. To harmonise these three so as to achieve one's object is termed tactics. Thus we may say that arms are the foundation of tactics, and bear a very intimate relation both to tactics and to the organization of modern society.

(B.) The position of the arme blanche among weapons.

Alterations and improvements were made in weapons during the passage of time as man's intellect developed. By offensive weapons are meant those used with a positive intention; those used with a negative intention are called defensive weapons. Arms are also divided into two classes—for use when the enemy is at a distance, and for use in a hand-to-hand struggle. The following are types of the weapons used in different ages.

In ancient times catapults and cross-bows were used for offensive action at a distance; the sword, dagger, spear, hatchet, club, and battle-axe were used at close quarters; and the shield, helmet, leg-protector, buckler, and breastplate were used as means of protection. In the middle ages improvements were made to those weapons already referred to, and there were, in addition, the halberd, hammer, iron-club, and lance for the offensive at close quarters; while for use at a distance the arquebus and blunderbus were employed. Armour, covering the whole body, and breast-plates for horses were also introduced. In modern times a great advance was made in the manufacture of weapons, and guns and rifles were invented for offensive use at a distance, and the bayonet, sword, and sabre were used at close quarters; while the defence depends on steel shields and various types of earth works and field fortification.

It will be seen, therefore, that at present rifles, guns, swords, sabres, and bayonets are the weapons most used. Those weapons like the cannon and rifle, which depend on the explosion of gunpowder for their action, are called fire-arms. Those like the sabre, sword, and bayonet, made from steel, and having a *whitish* edge, which are used for cutting and thrusting, are given the generic name of *arme blanche*. It follows, therefore, that both fire-arms, and the *arme blanche* are equally essential in the conduct of war to-day.

(c.) The arme blanche and fire-arms, from a tactical point of view.

To decide an action with the *arme blanche* is called, tactically, the *arme blanche* principle; and to do so with fire-arms is called the fire-arm principle. The value assigned to cold steel, or to fire-arms depends on which principle is in favour at the particular moment.

The history of the rise and fall of these two principles in Europe is shortly as follows.

In the first period—that is, prior to the invention of fire-arms—all fighting was carried out, as a matter of course, with cold steel. A little later came the golden age of cavalry under Frederick the Great, when the lustre of the *arme blanche* reached its apotheosis. In the second period—that is, after the invention of gunpowder—although fire-arms were both admired and used, yet during the early stages their construction was rough, and effect small, so that fighting was still carried out mainly with sword and bayonet, and fire-arms were subsidiary. The principle of the *arme blanche—e.g.*, that bullets are dull, but steel is sharp—was thus maintained until the time of Napoleon. The so-called "assaulting tactics," consisted of a preliminary artillery or musketry preparation, followed by a final bayonet charge with a strong body of troops in close order. Thence onwards, improvements in the construction of fire-arms were made every year; and finally in the war of 1870, assaults of the German Army very frequently failed on account of the French

Chassepot rifle, which was at that time considered a very powerful weapon. Since then, fire tactics have gradually come into vogue, and eventually the third period—that is, the present era—dawned; the situation which had hitherto existed was reversed, the fire-arm principle became all-powerful, and the principle of *arme blanche* was discarded. At this moment the Russo-Japanese war broke out.

Let us now consider for a moment the principles of our own (Japanese) tactics.

From ancient times fighting was carried out on pure *arme blanche* principles—the so-called hand-to-hand combats of mounted officers and dismounted men. In the 6th year of Meiji (1873) European tactics were introduced for the first time, and an Infantry Training manual was published; yet the method of fighting still adhered to the *arme blanche* principle, and the effect of fire-arms was recognized to be inconsiderable. A portion of the fighting men became skirmishers and carried fire-arms, whilst the main body advanced in rear in mass in order to carry out a bayonet charge; these were, in fact, the so-called decisive Napoleonic tactics. With the advent of breech-loading weapons, attention began to be more directed to fire-arms. In the 20th year of Meiji (1887) their effect was generally admitted to be so great that the use of the *arme blanche* began to be considered dangerous. In spite of this, however, during the China-Japan war (1894-5), an uninterrupted series of victories was gained on the plains and mountains of Manchuria and Korea with cold steel. After the war, magazine rifles came into use; partly owing to this fact, and partly in accordance with military opinion in Europe, an Infantry Training was published in the 31st year of Meiji (1898) in which the fire-arm principle was definitely established. This book laid down that an infantry action is usually decided by the volume of fire; that if a superiority of fire could be obtained at close ranges, victory was practically assured; further, that a charge should only be attempted against a weakly-held position, from which the enemy had already begun to retire.

In spite of all this, there remained a prejudice in favour of the original *arme blanche* principle, which was in thorough accord with the national character of the Japanese people: moreover, General Meckel—who, was at that time the principal figure in the reorganization of our army—advocated cold steel principles, and declared that in his opinion victory rested ultimately with the bayonet. The result was that the principle of the *arme blanche* came again into favour, and swayed the decisions of commanding officers. In practice, charge tactics were adopted, and the fire-arm principle of the Training Manual was, for a long time, considered theoretical, the result of mere academic discussion.

Basing their investigations on actual instances in the South African war, military circles in Europe studied the whole ques-

tion very thoroughly; they laid so much stress on the effect of modern fire-arms that they went so far as to advocate that the sword and the bayonet should never be used in daylight. The effect of their conclusions was felt in our country where some officers—not wishing to be out-of-date—formed an association called "A Society for the Investigation of the New Tactics" (*Shin Senjutsu Kenkyu Kwai*), whose object was the advocacy—conducted with unmistakable earnestness—of the fire-arm principle, which was the foundation of the "Infantry Training." Affairs were in this condition when the Russo-Japanese war broke out.

Chapter II. will deal with the changes of military opinion in Europe, caused by actual instances of the recent war; *e.g.*, whether European military circles have adopted the *arme blanche* principle or still lean towards the old fire-arm principle; also what changes have taken place in our own Infantry Training, on account of experience gained during the late war.

(D.) Methods of determining the value of the arme blanche.

It is a weakness of human nature that when any new thing appears in the world, an exaggerated value is always given to it. Is it not likely that popular opinion as to the value of fire-arms, before the Russo-Japanese war, suffered from the same bias? The universal pæan of praise which was sung about the fire-arm principle manifested itself in various ways—books on fire tactics, essays on the decisive range for musketry and artillery, trials of the effect of fire-arms carried out at Shimoshidzu Plain in 1901, the "Society for the Investigation of the New Tactics," formed by the General Staff, etc. What with books, experiments, and investigations, people became so obsessed with the virtues of the fire-arm principle, that there was undoubtedly cause for alarm lest the national character should begin to show a tendency towards the spirit of defence—as opposed to the spirit of attack. Those who, after the late war, wish to determine the value of the *arme blanche* must, therefore, be very careful not to fall into the same mistake as their friends who favoured fire-arms before the war. In the event of the reappearance of anything which has once been discarded, people tend to welcome and praise the same far beyond its real value, as the reaction after the cold treatment which they have awarded it. This is also a weak point in human nature. It is therefore very important now to be most circumspect in determining the real value of the *arme blanche*.*

In this essay, in order to determine the proper value of the *arme blanche*, I shall first investigate the principles of our own revised Infantry Training, and the opinions, concerning the *arme blanche* in Europe; a general idea of the military opinion

*One of the judges of the competition remarks:—"I consider this is an extremely important point."

on the subject will thus be obtained. Actual instances in the recent war will then be given, and applied to these opinions. Finally, deducing certain conclusions from the result thus obtained, a determination of the real value of the *arme blanche* will be arrived at. As already shown, in the list previously given, there are among weapons termed by the generic name of *arme blanche* three types, viz., spears or lances, used with the object of thrusting; swords, used with the object of cutting; and bayonets, used with the object of both thrusting and cutting. Lances were the most important arms in olden times, and in the golden age of cavalry, but they have been gradually discarded since the invention of fire-arms, and during the Russo-Japanese war their use was limited to the Cossack Cavalry, when their effect was very slight; at the present time they have practically been discarded. Swords have always been, and are still, used by officers of all branches of the service to lead their men and to protect their own bodies; also by cavalry in hand-to-hand fighting. Their effect is still admitted to be considerable. Bayonets made their first appearance with the invention of fire-arms, as a weapon peculiar to infantry; and any assault delivered by the most important arm, to wit, infantry, was carried out with the rifle as the fire-arm, and the bayonet as the type of cold steel. Consequently it is needless to say that the value of the bayonet decides the fundamental principles of tactics, and is a most important question in the military world. The expression *arme blanche* is, from a tactical point of view, at present, a synonym for the bayonet; therefore, the value of the *arme blanche*, in the present essay, is taken to be the value of the bayonet.

CHAPTER II.

MILITARY OPINION ON THE VALUE OF THE *ARME BLANCHE* AFTER THE RUSSO-JAPANESE WAR.

(A.) As illustrated by the principles of our "Infantry Training."

Let us study first of all, what are the fundamental principles regarding the value of the *arme blanche*, as laid down in our lately published "Infantry Training," which was revised according to experience gained in the recent war, and in conjunction with the recent progress of military science.

1. We find among the "Fundamental Principles" of "Infantry Training":—

"The object of an infantry action is to overwhelm the enemy with fire effect, and to destroy him with a charge. Musketry fire plays a great part during the progress of the action, and is a very important method

of fighting for infantry; but it is the bayonet charge which determines the final result."

This is amplified in the "Pamphlet explaining the reasons of changes introduced into the Infantry Training," as follows:—

"Infantry must usually get to close quarters with the enemy by means of a superiority of fire and then decide the final result by cold steel, using the *arme blanche* principle based on the spirit of attack."

2. The revised manual clearly states that the carrying out of the charge in individual training is to be as realistic as possible.

The "Explanatory Pamphlet" comments as follows on this point:—

"The manual lays down that practice of the charge shall be carried out with fixed bayonets, as if actually charging against a real enemy; this is a point to which instructors should pay particular attention to-day, now that the *arme blanche* principle has been definitely adopted." (Para: 11 of Chapter 1).

3. The main points of extended order drill have been revised as follows:—

"The objects of open extended order drill are (*a*) to ensure that each individual man in the skirmishing line knows how to act (viz., to advance by making use of the configuration of the ground, to halt, to fire, and finally to charge) and (*b*) to foster the spirit of attack." (Para: 55).

In relation to the above we find the following in the Explanatory Pamphlet:—

"The result of the adoption of the *arme blanche* principle is to ensure that infantry are proficient in the charge, in addition to their other three duties (viz.: use of ground, halting, and firing); in addition, the fostering of the spirit of attack in the skirmishing line is a *sine qua non*." (Para: 13 of Chapter 1).

4. We find the following in "Infantry Training," as regards the method of carrying out a charge, when training the company in extended order drill:—

"During the progress of an action casualties are made good, the firing line is reinforced, and the company gradually approaches the enemy. Should the company, after fixing bayonets, be able to come to close quarters with the foe, company commanders must place themselves at the head of their men and deliver a fierce assault on the enemy's position with their utmost vigour. It is at this precise moment that the martial spirit of the company, as a whole, manifests itself." (Para: 162 of "Infantry Training.")

The Explanatory Pamphlet, explaining the foregoing, says:—

"The company commander must place himself at the head of his men, and carry out a charge; this is based on the fundamental principle that the charge is the final resource in battle. In other words, this fundamental principle is that property which unifies the training and martial spirit of the company." (Para: 10 of Chapter II).

5. We find also as follows, concerning a company action :—

"Should the martial spirit and training of a company be high, it will charge over and over again, though failing in its first charge, and though there is no assistance to be expected from other companies. However strong the enemy may be, yet he will be eventually crushed if the company attacks him desperately to the last." (Para : 163 of "Infantry Training.")

6. During the progress of a battalion action,—

"should the enemy show any signs of wavering, the battalion commanders must at once take advantage of the opportunity to place themselves at the head of their men, and deliver a charge. If only a part of the enemy's line is fiercely charged by our troops, still the whole line will show signs of wavering." (Para : 188 of "Infantry Training.")

7. "Against a very stubborn enemy it is possible that one charge will not achieve the desired result; in such a case the battalion must halt in a suitable spot, and seek a suitable opportunity for delivering another charge. Regardless of consequences this charge must be repeated over and over again." (Para : 189).

Commenting on this, the Explanatory Pamphlet says :—

"there are occasions during a battle, as shown by actual events in the late war, when a single charge is not successful. Troops who expect to succeed always with their first charge will, in such a case, lose heart, and be liable to unexpected disaster. It is for this reason that the manual draws especial attention to this point, and demands the display of that national characteristic, which refuses to give up until victory is attained, and the repetition, no matter how many times, of a charge that has once failed." (Para : 10 (*b*) of Chapter II).

8. During the progress of a battalion action,—

"Should a battalion in the front line of the defence be charged by the enemy, it must open fire with absolute *sang froid*, and deliver a determined counter-attack the moment the enemy appears to be wavering. Should the enemy actually enter our position the battalion commander and all his men must endeavour to destroy them by means of a fierce fight at close quarters." (Para : 191).

9. During the progress of a regimental action,—

"the regimental commander should keep some detachments in reserve until the last moment, and then lead them to the assault with the war flag." (Para : 203).

10. Among the general principles of all fighting, it is clear that—

"infantry must obtain the greatest possible effect from rifle fire during the progress of an action, and then finally deliver a charge." (Para : 21 of Part II).

11. "Retreat easily becomes a rout, and concentration may be impossible. For this reason the commander of a force must endeavour by every possible means to restore the balance of the fight, should things be going against

him. At this time, should the infantry be able to increase the volume of their fire, a charge must be carried out....." (Para: 24 of Part II).

12. Concerning attack:—

it is not possible by fire effect alone to drive off the enemy; therefore, the attacker must rely on a charge for obtaining the final victory." (Para: 38 of Part II).

13. "Should a neighbouring unit deliver a charge, the whole force should co-operate, and advance to the assault also. In face of a charge the enemy will resist by every possible device and may even deliver a counter-attack. Therefore, the commander of the attacking force and all his men must exert themselves to the utmost and fight so as to achieve a complete success for the charge they are carrying out." (Para: 38 of Part II).

14. "Should our charge be repulsed, a second and a third charge must be carried out by successive parties from the massed body of troops in the rear. In the event of there being no such body, officers and men must halt as close to the enemy as possible, pour in a fierce fire, and charge again and again with the utmost determination: this must be continued until the object is finally obtained." (Para: 42 of Part II).

15. During the progress of a defensive action,—

"Should there eventually be no suitable opportunity to deliver a counter-attack; at the time when the enemy are nearest, he should be shaken with all the fire that the defender can bring to bear upon him, and be charged by the whole of the defensive line." (Para: 72 Part II).

16. During a defensive action,—

"Should the enemy effect an entrance into our position, the defenders must carry out a hand-to-hand fight with him to the end. Should there be a massed force of troops in rear of our position, they should take advantage of the confusion of the enemy to deliver a determined attack and attempt to retake our position." (Para: 73 Part II).

17. "Should the enemy's attack be temporarily checked by the fire of the defenders, or should a mistake in the enemy's movements be noticed, the senior commander present should at once assume the offensive with all the reserves." (Para: 71 Part II).

18. "When the defeated side is withdrawing from the battlefield, the enemy's attack in certain places is likely to become, in consequence, very severe; in such a case it is a fundamental principle to resist as long as possible at these threatened points. Should the state of affairs permit, it is better to retreat under cover of night; also, in order to conceal one's intentions, a fierce counter-attack should occasionally be delivered with a part of the force, and advantage be taken of this to withdraw from contact of the enemy." (Para: 81 Part II).

19. "A night attack should be begun at the closest possible range; the secret of success is to suddenly come to close quarters with the enemy,

and settle the result with the bayonet in a single moment. The reason of this is that one cannot obtain the full value of fire at night, and also the fact that firing discloses our intentions to the enemy, and has the additional disadvantage of delaying our advance." (Para: 85 Part II).

"A night attack should begin at the closest possible range; each unit commander should keep his unit under his immediate control as far as possible, and attempt to break the enemy's position at a single point with a fierce charge." (Para: 86 Part II).

20. "During a night defence one cannot expect the co-operation of neighbouring detachments, or help from troops in rear at the right moment; for this reason each individual unit must resolutely defend its own position with determination, open fire at the nearest possible range, and endeavour to annihilate the enemy. In other words, when the enemy has come to point-blank range, open a tremendous musketry fire, throw hand-grenades, and at this precise instant deliver, in a determined manner, a counter-attack with the bayonet." (Para: 89, Part II).

21. Regarding wood fighting:—

"during the passage of woods or forests especial care must be taken to keep the right direction; it is also necessary to be always prepared for a fight at close quarters." (Para: 103 Part II).

22. Regarding fighting in villages, etc.:—

"the detachment which has entered into the area occupied by houses must continue charging the rear of the enemy until they have reached the limit of the village (or town, etc.). After this, should any of the enemy be still defending a house, a part should be detached from the main body to deal with them." (Para: 106 Part II).

(B.) **The German view.**

The Emperor William made the following remarks regarding bayonet fighting:—

"The art of bayonet fighting is at present absolutely without value; no profit can be derived from it in war, and its study merely wastes time in peace. For this reason it is sufficient to make a soldier proficient in thrusting and parrying when at a standstill or on the move. The difficulty of applying this training to an actual engagement is still greater than forming a large body of skilled bayonet fighters."

It is an undoubted fact that at that time the effect of fire-arms was supposed, in German military circles, to be all powerful, and it was considered that an infantry engagement could usually be decided by fire effect. In nearly every case the result depended upon concentrating a severe fire upon the enemy at close quarters; the charge was only delivered against weak positions, after the enemy's artillery had already retired. It is not to be wondered at, therefore, that advocates of the *arme blanche* principle, like General Meckel, should view with disgust such ideas, and publish in book form their own diametrically opposite views.

Later, from the experience of the South African war, the fire-arm principles obtained still greater sway. It was argued that an attack against a position in broad daylight was impossible; and a feeling of great dislike to frontal attacks arose. There was much searching for the so-called decisive musketry range, and even at manœuvres the decision of an engagement was given when the opposing sides were 500-600 yards apart, nearer than which they were not allowed to approach.

What was the effect of the experience of the Russo-Japanese war on the fire-arm principle? Germany studied all the tactical lessons which arose from the war with the greatest zeal, and was by far the earliest country to revise her Infantry Regulations. The principle of the fire-arm which had hitherto obtained, was radically altered, and the supremacy of the *arme blanche* securely established.

The New German Infantry Regulations lay down that (para. 324):—

"the attack begins when fire is opened on the enemy from the nearest possible range; the enemy is then overthrown by a charge."

This has been amplified by a German writer as follows:—

"until the Russo-Japanese war, the possibility of directing fire upon the enemy at very close range, was universally considered doubtful; that campaign, however, made clear that it was possible. This being so it is wrong to state that, unless soldiers are even superior to our own countrymen, they cannot effect a surprise against the effect of modern fire-arms for what other people can do we must be able to do. If the German nation does not possess the spirit, then indeed we have reached the lowest depths, and it is time that we received our instruction from Bertha von Suttner (the lady who advocates the abolition of war); we shall have reached, in fact, that golden age when war is no more! This time, however, has not yet arrived.

During the South African war, did not the British soldiers, who come of the same stock as ourselves, follow in the footsteps of the knights of old, and gladly lay down their lives through loyalty to their Sovereign? There was, indeed, once a time when to fight with cold steel was considered impossible; but from recent actual experiences it is clear that a stubborn enemy cannot be turned out of his position by fire effect alone. He must be driven off with the bayonet."

No. 34 of the *Militär Wochenblatt*, published in 1906, contains an article entitled "The bullet is a foolish woman, the bayonet a strong man." The gist of the article is as follows:—

"'The bullet is like a foolish woman, the bayonet a strong man' is an aphorism of Suvarov. Even those people who, from the first, were most extravagant in their praise of fire-arms, and who, as the construction of these improved, laughed the *arme blanche* to scorn, as being some thing not worth even glancing at,—even these now at last recognize the value of cold steel. They admit, in fact, the truth of the old saying. It is obvious that no one can dispute the great effect of modern fire-arms; but it is also indisputable that, unless they receive assistance from a bayonet assault, they cannot, of themselves, decide the issue of an engagement.

"If we carefully examine the tactics of previous campaigns, we find that they divide themselves into two classes; one laying stress on material effect, the other on moral effect. Material effect means the effect obtained from bullets, defensive works, etc.; moral effect means the effect of the spirit of attack, which demands the bayonet charge, *i.e.*, the destruction of the enemy by human bullets. The investigation of these two types of tactics shows that they were in vogue or not, as the case might be, according to the changes in the spirit of the age; but it must not be forgotten that material effect was nearly always subsidiary to moral effect.

"Suvarov was certainly a man of great intellect, worthy of admiration both from the point of view of his erudition and his actual deeds; the foregoing maxim was a simple summing up of his own experience. However, owing to the very strange way in which he usually said and did things, there were times when he was adversely criticized, and invited misunderstanding. Eventually, during the Russo-Japanese war, there were some people who said that the cause of Russia's defeat was to be found in the fact that her soldiers had been trained on the principles of Suvarov, and used cold steel when attacking.

"This is the most flagrant case of failing to understand Suvarov's mind. If the Russian Army had strictly adhered to the spirit of the maxim, which Suvarov had given utterance to, as a result of his own observations and experiences when carrying out charges under the greatest difficulty during that terrible campaign in the Alps, it is possible that the result of the last war might still be undecided.

"Did Suvarov, the author of the aphorism 'the bullet is a foolish woman, the bayonet a strong man', despise bullets as absolutely as he would have despised a foolish woman? If we carefully examine his actions it is clear that he had very decided ideas about the value of fire-arms.

"It is self-evident that there is a difference between observations carried out on the effect of fire-arms to-day, and on the effect of those of that time,—when effective range was limited to 100 paces; the spirit of the maxim, however, is as true to-day as it was at that time. What was the spirit of Suvarov's maxim? It is obvious what this spirit was, if we properly appreciate Suvarov's instructions and orders. Suvarov's maxim was not intended to compare *fire-arms* with the *arme blanche*, it was intended to differentiate between *passive defence* and *courageous attack*.

"During the war of 1859, the fire-arms used by Napoleon III.'s infantry were very inferior to those used by the Austrian infantry. As soon as Napoleon realized this, he impressed upon his men that the fine rifles of the enemy were only dangerous at long ranges; and that there was no danger if they closed upon the enemy with their bayonets. This makes clear the principle of Suvarov's maxim, *i.e.*, that the spirit of heroes is the same always, whether now or in the past.

"During the great war of 1859, the French soldiers obeyed their Emperor's order, and were victorious. Later, however, they began to appreciate the effect of fire-arms, and studied their manufacture with much assiduity; they evolved a very fine weapon, but as a consequence began to place too much reliance on *material* effect, and to disregard *moral*. In fact, they forgot their Emperor's command, which had previously won victory for them, and, as a result, they laid themselves open to the defeat in 1870, from which it will take them years to recover.

"If we calmly examine the cause which led to the disastrous defeat of the Boer forces in the South African War, we see that this result was not

due to the continual arithmetical increase of the British Army; rather was it due to the Boer forces lacking sufficient courage to take the offensive. The Transvaal forces were undoubtedly very proficient in the use of fire-arms, and inflicted very great losses on the British Army; and, on occasions, a part of them assumed the offensive and were successful. But the majority of soldiers and leaders in the Boer Army were deficient in the courage required to carry out Suvarov's maxim. The result was a foregone conclusion, whatever the Boers might do, namely, their total defeat. On the other hand the British forces, regardless of the terrible losses inflicted on them by the Boer riflemen, advanced to close quarters with the greatest bravery, and manifested the real spirit of Suvarov's maxim. In the end they obtained a decisive victory. The teaching to be obtained from this war proves the truth of the following saying: "the army which expects to be victorious by the effect of good fire-arms alone, assuredly invites defeat."

"From this one sees that a decisive effect from musketry is usually only obtained when assisted by a bayonet charge. Victory will come to the side which has a fixed and indomitable determination to continue fighting until the enemy is vanquished, and to carry out a charge without the slightest hesitation. This is proved by examples from ancient campaigns; and the majority of the Manchurian battles demonstrate also the force of Suvarov's maxim from both a strategical and tactical point of view.

"General Kuropatkin's strategy should be termed timorous rather than circumspect. Though one cannot, of course, definitely state the cause which led him to over estimate so greatly the superiority of the Japanese Army, and consequently to operate so cautiously, still it is clear that one important reason was that the Russian Army had altogether forgotten Suvarov's maxim, while the Japanese Army, on the other hand, laid great stress upon it. The Russian Army depended on strong positions, deep trenches, and high parapets; even when they had inflicted great losses upon an enemy who had delivered an assault, they failed to take advantage of the opportunity to assume the offensive themselves. Instead, they retired and avoided the decisive issue. This method of fighting was very similar to that adopted by the Boers in South Africa; even if the Russians wished to be victorious, how could they possibly be so, under these conditions?

"The training of the Japanese infantry in musketry, open order fighting, and use of the configuration of the ground, was better than that of the Russians; but if the former had not thoroughly understood the real value of the bayonet charge, the result of the war would merely have been that the Russian losses would have been greater than the Japanese losses.

"In short, the principal reason for the victory of the Japanese Army, was their possession of such a tenacious spirit that, absolutely regardless of any losses that they might suffer, they persisted in getting to close quarters with the enemy, and continuing the fight until the latter had been defeated and annihilated. Their determined and unyielding spirit made the Japanese regardless of death, so that even though their shooting was erratic, and the training of their infantry, in some cases, imperfect, they were usually successful when they assumed the offensive.

"In the time of Suvarov, fire-arms were of the old muzzle-loading pattern, and did not possess much power; the bayonet was therefore unrivalled as a weapon for deciding the issue of an engagement. Now,

however, the new types of magazine rifle have tremendous effect, and in addition, hand-grenades of terrible power are used, so that at first sight the bayonet does *not* appear unrivalled as the deciding factor of a battle Has the magazine rifle much effect when its ammunition is all used up? Can a man carry an unlimited number of hand-grenades? And is there no such thing as these hand-grenades failing to explode? The answer to all these questions is in the negative, and therefore we are forced to the conclusion that the bayonet is the simplest, easiest to carry, and most handy weapon there is. In short, as Suvarov states in his maxim, the weapon which has the honour of being the most profitable to use in the attack, is still the bayonet."

In the course of a speech delivered in May, 1906, at the Berlin University, the German Emperor said that the value of the *arme blanche* was very great in battle, and that its effect was very great also in the moral and physical training of the troops; and for this reason it must be very largely used, in order to attain the object of training. Reflecting on this, we can see what a high position the *arme blanche* occupies in German military circles.

(c.) The Russian view.

The Russian Army have always held to the principle that the *arme blanche* is all-powerful, and have been trained to decide the result of an action by means of the bayonet alone—they believe in the fact that "the bayonet is a strong man, the bullet is a foolish woman." The belief that a bayonet charge must be successful, even if the enemy possesses modern fire-arms, is, in fact, the well-known principle of Dragomirov.

A certain Captain Solobev (a company commander in the 34th Regiment of the 9th Division of the 1st Siberian Army Corps), gave a lecture, after the war, at the St. Petersburg Officers' Club, on the infantry fighting during the war. Feeling that the value of Dragomirov's principle had been enhanced by the campaign, he said, at the beginning of his lecture, that there were many things he had learnt during peace which were useless in war; but that he had not been able to discover anything really new on the battlefield that was not known already. His views on the *arme blanche* were as follows:—

"There are some officers to-day who consider that the bayonet has no value; others, again, have the strange idea that it should only be used in certain situations, as a sort of appendage of the rifle. But the fact is, that the bayonet is of very great importance; in the recent war it cannot be denied that the bayonet was nearly always used, in fact, it is no exaggeration to say that there were no occasions when it was not used.

"I will ask you to take your minds back to the fighting on October 12th, 14th, and 16th (the battle of the Sha Ho). Is it not the case that the whole front of our line was dominated by bayonet fighting? I myself both took part in, and witnessed, bayonet charges; I also saw trenches of the enemy captured by our men in a few minutes by means of the bayonet, after 3 successive days' cannonade had failed to make any impression. I

saw that the spirit of those men who had conquered in a bayonet charge was such as would cause them to scale the very heavens; I saw, too, the terrible result of such a charge, when the victors were the only survivors; the defeated side being all dead.

"Infantry can approach much nearer to the enemy's position during a fire action nowadays, than formerly, in spite of the improvement in fire-arms; according to the Manual this distance is laid down to be 150 to 300 paces from the enemy's position. When it is intended to carry out a bayonet charge, should the enemy be approached nearer than this without due precautions, the majority of the attackers will fail to reach the enemy's line. It is at this moment that the defenders, with a calm and steady musketry fire, can ensure the failure of the attack.

"The final fire position is, as a matter of fact to-day, only about 30 or 40 paces distant from the enemy's line; and cases are not wanting when the opposing sides have had to remain lying down in their respective positions for a long time. Occasionally neither side carries out a charge; at other times, the opposing forces—distant perhaps only 15 or 20 paces from each other—remain in that position until two or three brave soldiers break out of the ranks and force their way into the enemy's line. In such circumstances it is usual for the whole company to follow at once the example set by these few men. When once a charge has been undertaken, it must be prosecuted without any halt or delay; to lose the right opportunity is fatal. Although one could wish to steady one's men before delivering the assault, there is always this danger of losing time, and it is a point to which officers must pay special attention. The officer's slightest action is copied by the men, and as a consequence the enemy's first bullet and foremost bayonet are directed against the officers. This is the reason why our officers suffered such heavy casualties.

"On the other hand, I favour the Japanese method of resisting a bayonet charge, *i.e.*, to abandon one's trenches, and retreat about 10 paces in the rear, so that the trench lies between the two forces, and becomes a sort of obstacle; while the enemy is engaged in crossing this obstacle, one takes advantage of the slight confusion into which he is thrown, and delivers a bayonet charge against him.

"Very small trenches can, of course, hardly be termed obstacles. Further, supposing the enemy to have come to very close quarters, but that it is still uncertain whether they are going to charge or not, it may be decided to deliver a counter-attack, and one will then have to cross over an obstacle, in the shape of the trench, oneself. When about to deliver a counter-attack, the universal rule is to pour in an overwhelming fire from as near to the enemy as possible, and then to deliver a bayonet charge.

"There are some people who say that the power of fire-arms is so great that the bayonet charge should be discarded; the point of their arguments is based on the fact that there were one or two instances during the Russo-Japanese War when a bayonet charge failed, owing to musketry fire. This is undoubtedly true; but why is the equally true fact that there were innumerable occasions when musketry fire failed to repulse a bayonet charge, ignored? Were there not many instances when the assaulting column entered the enemy's position in the face of an overwhelming musketry fire? In such circumstances what would have been the fate of troops who did not set much store by the bayonet, or who did not know what

an engagement with cold steel was? One need not think very deeply to decide whether they would have been able to stand against the attack of such an enemy.

"I will put forward one other objection to the argument advanced above. Were the enemy's positions—and more especially his prepared positions—ever captured by fire effect alone? It is an undoubted fact that during the late war we evacuated our trenches, *not* on account of the enemy's fire, but only in obedience to orders from our superiors.

" At the battle of Liaoyang on August 30th and 31st, 1904, the Japanese Army attacked our positions repeatedly. The fierce fire which we poured upon them caused many casualties; especially was this the case when they advanced in column, when some bodies lost so many in killed and wounded, as to be almost wiped out. Although they persevered, and by dint of repeated attacks, arrived within three or four hundred paces of our position, they were eventually always repulsed. But in another portion of the battlefield, the enemy carried out bayonet charges repeatedly and caused very great carnage.

" Does this not show that our infantry, at the end of a fight, were unskilled in the use of the bayonet? Not only were they unable to repulse the assaulting columns, but they had perforce to abandon their position."

" During the battle of Liaoyang there was not a single instance of the Japanese Army capturing one of our positions by fire effect alone. But their artillery silenced ours, and their shrapnel searched our lines; in my own regiment, we left 18 officers and 700 rank and file on the battlefield. And during these 2 days' terrible fighting, were the enemy able to seize one of our positions? I ask you to remember again that it was not the effect of the Japanese musketry that caused our army to retreat from Liaoyang."

" During the battle of the Sha Ho in October, 1904, both armies lay three days and nights round one position; both sides, in spite of terrible losses from artillery and musketry fire, continued the fight, and eventually neither side retreated a single step.

" My own view is that in this, and similar cases, the fight usually degenerates into a mere position engagement, while both sides are hesitating to deliver a charge, and so the object of a decisive victory cannot be obtained.

" To quote the opposite case of the night attack at Mt. Towamarin, where there were three lines of works, the entire position was captured at the point of the bayonet; and the defenders, unable to retreat, were all killed at their posts.

" Unless he is taught the real value of the bayonet, the object of the soldier's training is not attained. It is therefore essential to give him good illustrations of its value, teaching him that this weapon is for use when fighting at close quarters, and that it is usual for soldiers to *advance* on the battlefield in order to use this weapon; and finally to impress upon the men that every other method of fighting is only a preparation for fighting at close quarters with the bayonet.

" We can understand the value of the bayonet if we examine the statistics of casualties caused by this weapon. We find from statistics

that casualties caused by the bayonet are almost in the same proportion as those caused by artillery, when the latter arm was at its best.

"The cases I have named above are all undoubtedly such as might occur on a modern battlefield. Especially do we find that the bayonet charge raises the soldiers' spirits, and that the result of such a charge is a fundamental factor of victory; in ancient and modern times it acts as an unfailing stimulant to martial courage."

(D.) The French view.

The following extracts from a book entitled "The *Arme Blanche*" by a captain in the French Army, are illustrative of the feeling of French military circles.

"We must admit that the Russo-Japanese War undoubtedly reinstated the bayonet which had been condemned out of hand at the time of the introduction of the magazine rifle. It is unnecessary to point out that musketry, of course, plays the larger part in an engagement; but, at the same time, it is only a means to an end, and merely a preparation for attaining a final and decisive victory by means of the bayonet. . . . The movements of the two armies in the Russo-Japanese War prove clearly that the adoption of anti-bayonet tactics was a mistake, and that as long as there are soldiers on this planet who absolutely disregard death, decisions and results on the battlefield will depend most certainly on *arme blanche* tactics."

"Although the bayonet charge took on a new lease of life in this campaign, and recovered its old-time value, it is still quite obvious that a favourable result could not be expected from it unless some new method of carrying it out was adopted. As clearly illustrated at the engagement of Chiu-lien-cheng, it is impossible to make use of close formations, as hitherto, for the troops detailed for the assault—always excepting night fighting. The party must be carefully divided into small squads, and these must converge towards one fixed objective, making use of every kind of cover. The Japanese Army showed us, at the battle of Liaoyang, the very best method for carrying out a daylight bayonet charge under modern conditions, under the fire of the enemy.

"In connection with this example, I propose to give two or three paragraphs from an account in that most excellent book, entitled, "A War Correspondent in the Far East."

'While I was standing on a great hill in the rear, I suddenly saw through my binoculars, a scattered yellow line appear on the ridge of a certain slope. This was part of the Japanese Army, now rid of their knapsacks and preparing to assault. Each line is at such times divided into squads of from 12 to 20 men, under an officer or N.C.O. The actual point of attack in the enemy's position is shown to each party beforehand; and this is the only order they receive from their leaders.

'The first line now springs from the skirmishing trenches, and the leaders of the various squads run at top speed to the nearest hollow, where they lie down; the squads follow them, paying no attention to keeping correct formation, but only intent on reaching as soon as possible the positions where they are to take cover. In this way the front of the

Russian position appeared to be covered with bayonets, gradually getting nearer and nearer, as they advanced by short rushes. While each squad was following closely after its leader, who decided what cover to take in front and what path to follow, it occasionally happened that some of the squads, in order to take advantage of cover lying outside the axis of their own advance, swerved to the right or left, or else pressed forward by the same path as a neighbouring party; I observed, however, that afterwards they always gradually recovered their former direction. The original formation which each squad possessed was completely lost after the first halt, each party being formed of men scattered about on the slope, some lying down, some crawling forward, and others running at top speed. The Japanese Army in this way reached to within about 900 yards of the Russian defensive position, where the first line halted to re-arrange its ranks, on the slope of the earth the Russians had thrown up to protect their wire-entanglements.

'By the time the first line of the Japanese Army had advanced about half-way to their objective, the second line had left the shelter of the skirmishing trenches, and were advancing towards the above parapet, making use of such natural cover as they could find, after the manner of the first line. Six bodies of troops now came rolling on like waves, climbing the hill littered with the bodies of dead and wounded men; these successively took cover behind the glacis some 100 yards from the enemy's trenches. Then one desperate party started cutting the wire-entanglements under the enemy's fire, and climbing over them; to destroy the enemy's defensive arrangements. Though these brave men were able to open a way for their comrades to pass, very few returned safely to their units. Now the whole of the Japanese force fixed bayonets, and the dazzling glitter of steel showed that the final stage—the bayonet charge—was about to be entered. "All the officers shouted "Banzai" and rushed forward from their cover, followed by their men, also cheering. Soon they encountered the wire entanglements, the abattis, and every conceivable obstacle, besides the fierce fusilade of the enemy. In spite of this the officers continued their advance, and the whole force, after lying down for a moment, rushed forward again without halting. In this way the Japanese progressed to within 5 or 6 yards of the enemy's trenches, the firing line of the Siberian Regiment fired one last desperate volley at them, and then filed down the reverse slope of the hill. The victory thus rested with the Japanese Army, whose attack had continued for exactly one hour and ten minutes.'"

The above is an account of the fighting of the 5th Division of the 2nd Army, on the 30th and 31st August.

(E.) The Austrian view.

On both political and religious grounds the Austrians seemed to have some diffidence at first in criticising the operations of the Russian Army, but as time went on, they formed a just estimate, and were not afraid of its becoming public property.

A certain general staff officer, who was attached for a long time to the Russian Army, gave a lecture at the Officers' Club

at Vienna, on his return home; during the lecture, he made the following observations on the *arme blanche*.

"When I arrived in Manchuria, General Suvarov's maxim about the bayonet charge was a subject of every-day conversation in the Russian army; and when one looked at the magnificent physique of the Russian soldiers, and thought of them wielding their rifles, with the long bayonets affixed thereto, it was no wonder that one imagined them capable of overthrowing any foe they might meet. At the time of the Review at Liaoyang, before the Battle of Chiu-lien-cheng, General Kuropatkin said to me, 'Do you see our robust and perfectly developed soldiers? Are they not splendid? In a bayonet charge one of my men will be a match for three of the enemy.' As I actually saw these troops, I thought that they would most certainly be influenced by the instructions, full of the offensive spirit, which were given them by the General; but after witnessing the first engagement, I at once realised that my expectations were likely to be falsified. I saw that the brave speech about bayonet charges consisted of mere empty words which did not contain the essential inner meaning one had imagined; yet these empty words held Kuropatkin and his officers as if in chains, and led them into egregious blunders. These Russians did not realise that to-day the rifle *is* the principal weapon for infantry, and that the bayonet *is not*; and they failed to understand that the teaching of General Suvarov on bayonet charges is limited absolutely to the attack.

"The training of the Russian Army a few years earlier, when General Kuropatkin was War Minister, was undoubtedly founded on this mistaken idea."

Major de Dani,* of the Austrian Army, in his book entitled "Criticisms and observations on both combatants in the Russo-Japanese War," when debating the relative effect and value of the *arme blanche* and fire-arms, makes the following remarks:—

"Both from my own observations of a great many battles, and also from the reports of the combatants themselves, it appears that the result of most engagements was decided by the bayonet. Further, that one was only able to repulse the enemy by fire effect, when he was surprised, or placed under a cross-fire, or was absolutely without cover. Owing to these facts, a great many foreign officers came to the conclusion that the tactics which had hitherto obtained—viz., the placing of great reliance on the effect of rifle fire—must be changed. In order to arrive at a definite decision, one must take into consideration the many fundamental principles and attendant circumstances which influenced infantry fighting. I propose, therefore, to give some examples here, and show the result of the use of the *arme blanche*, and the rifle, in preparatory and decisive engagements.

"(a) EXAMPLES OF FIGHTS DECIDED BY THE BAYONET.

"The right wing of the Russian Army, at the Battle of the Yalu, did not begin to retreat until it received the bayonet charge of the 2nd

*Military Attaché to the Austro-Hungarian Embassy in Tokio until 1910.

Division. At the Battle of Chiao-tou, that portion of the Russian position which received a frontal attack, was captured by a bayonet assault.

"During the Battle of Liaoyang, a greater part of the night fighting was decided by the bayonet. In addition, the daylight engagement in the *kaoliang*, which took place with General Orlov's Brigade, was won by a bayonet assault.

"During the Battle of the Sha Ho, both night and day engagements were nearly all settled by the bayonet.

"In particular, should be mentioned the fighting near the right wing, and at Lang-T'ou-Shan.

"At the Battle of Mukden, the Japanese 2nd and 12th Divisions had to resort to a bayonet charge in order to drive the enemy from the works he had constructed near the Sha Ho.

"(b) EXAMPLES OF FIGHTS DECIDED BY FIRE EFFECT.

"During the pursuit after the Battle of Ha-ma-tang, on May 1st, 1904, the enemy was forced to surrender by the volume of musketry brought to bear upon him.

"At the Battle of Chiao-tou the fight opposite the Russian right wing was decided by the converging fire of the Japanese Army.

"During the Battle of Ta-wan and Yu-shu-ling, numerous small combats were settled by rifle fire. For instance, the right wing of the Japanese Army surprised and captured with rifle-fire the Russian position at Fu-chia-shan, and in the direction of the left wing, the enfilade fire of the Okazaki Brigade drove the Russians from Pien-ling. During the attack on Ssu Shan, at the Battle of the Sha Ho, the sudden enfilade fire of the same brigade, determined the result.

"The engagement of Pen-hsi-hu was decided by bringing the machine-guns of the 2nd Cavalry Brigade into the action. During the attack on Wai-tou Shan, the attackers had already achieved the victory by their rifle-fire; and, though they subsequently carried out a bayonet charge, the enemy had already evacuated the position. During the Russian retreat at the Battle of Mukden, the fight of the 1st Japanese Army was absolutely decided by rifle-fire.

"The number of occasions when the defenders absolutely stopped attacks by means of rifle-fire were innumerable; if we reflect on these occasions, we see that such a result was only natural. When victory was not attained in these circumstances, it was due to reasons other than the effect of musketry. A few examples of such occasions are appended.

"At the Battle of Mo-tien-ling, the Russian Army gave up its assault on account of the Japanese musketry fire. On this occasion, in spite of their superiority in numbers, the Russian leaders lacked the confidence to advance resolutely against this fire, and so decided to retire.

"At the Battle of Ta-wan and Ye-shu-ling, the attackers would have failed to secure victory unless, as already noted, they had adopted surprise tactics; in all the other combats the attackers were practically destroyed by the fire of the defenders. At the beginning of the Battle of

Liaoyang, the Japanese Army, bearing in mind these experiences, did not once attempt a daylight charge. When they did attempt one, they were repulsed by rifle-fire; and in a similar way the Russian Army's attack on the Guard Division in daylight was beaten off with the bullet.

"During the Battle of the Sha Ho, the attacks of both the Russian and Japanese Armies were considerably hampered by the effect of rifle-fire. During the Battle of Mukden, the Russian fire kept the Japanese Army in its trenches for nearly ten days. A small success was attained by means of a night attack, when the enemy's bullets were avoided.

"Basing one's idea on the foregoing facts, one reaches the following decision. The occasions when the bayonet must be used, are usually those when the defenders are ensconced in excellent cover, and protected from much loss from rifle-fire. Again, when planning an advance, should the defenders' fire show no signs of diminution and continue to be fiercely directed against the attackers, the latter will probably be only able to advance under cover of night. Therefore, should the enemy be under good cover, the effect of infantry fire is so small that another occasion must be sought in order to obtain victory by rifle-fire alone."

(F.) The British view.

Military circles in England, as in other great European Powers, attached great importance to the value of the *arme blanche*, as a result of the actual experience of the Russo-Japanese War.

The new Field Service Regulations, published in 1909, contain the following paragraph under the heading of characteristics of infantry.

"The essence of infantry tactics consists in breaking down the enemy's resistance by fire effect, and then completing his overthrow by assault. Although the enemy may not await the assault, infantry must be constantly animated with the desire to close with him. Troops under cover, unless enfiladed, can seldom be forced to retire by fire alone; a decision by fire, even if possible, takes long to obtain. In order to drive an enemy from the field, assault, or the immediate threat of it, is almost always necessary."

The same manual also, in its directions for the conduct of the attack, lays down that:—

"The climax of the infantry attack is the assault, which is made possible by superiority of fire. The fact that superiority of fire has been obtained will usually be first observed from the firing-line; it will be known by the weakening of the enemy's fire, and perhaps by the movements of individuals or groups of men from the enemy's position towards the rear. The impulse for the assault must therefore often come from the firing line, and it is the duty of any commander in the firing line, who sees that the moment for the assault has arrived, to carry it out, and for all other commanders to co-operate as soon as possible. Should it be necessary to give the impulse for the assault from the rear, all available reinforcements will be thrown into the fight, and as they reach the firing line, will carry it with them and rush the position."

Again :—

"It will often happen that opportunities for closing with the enemy will arise at other points of the battlefield than where the decisive attack is being delivered. Such an opening should be seized at once, and a local assault delivered. The result of effecting a lodgment in a portion of the position will be to weaken the defender's hold on the remainder, and may even force him to fall back along his whole line."

(To be concluded.)

NOTE.—Chapters III and IV, which will appear in the August number of this JOURNAL, deal with :—

Chapter III. "Actual Instances in the Russo-Japanese War, of the Use of the *Arme Blanche*."

Chapter IV. "The Determination of the Value of the *Arme Blanche*," concluding with the author's views on "The Future of the *Arme Blanche*."

The following article is, by agreement with the Society for Nautical Research, reproduced from the May number of "The Mariner's Mirror."

THE BATTLE OF NEW BRIGHTON.

By W. Senior.

"THEY write from Deal," says the "British Gazetteer," of the 14th June, 1755, "that the impressing for seamen was yet carried on there with much vigour, and that several have been taken out of homeward-bound ships arrived from foreign parts to hasten the equipping some of our men-of-war." The outward-bound ship was exempt from these attentions because they interfered with the merchants' voyages; but not alone in the Downs, but all round the coast, the cruel practice of pouncing upon the homeward-bound seaman before he could set his foot ashore was at this period being "carried on with much vigour." A fortnight before the above date it had led to fighting off Liverpool between the Navy and the Merchant Service. Looked at from this distance there is an element of tragi-comedy in these encounters and in the legal consequences which followed.

H.M.S. *Winchelsea,* of 20 guns, Francis William Drake, Esq., Commander, was lying in the mouth of the Mersey, having orders from the Admiralty to impress seamen, when an English merchant ship was observed coming into the harbour and proved to be the *Upton* of Liverpool, Thomas Birch, master, from Maryland. The *Winchelsea's* barge was sent to board the vessel, but found all her hands armed with muskets and cutlasses and her "great guns" loaded; and the Navy boat was at once told to keep off or take her chance of being sunk. Birch, the skipper, diplomatically hailed the people in the barge from the *Upton's* cabin window, and said his seamen had "confined" him and taken the command of the ship from him. The barge sheered off a little; possibly Watson, the master of the *Winchelsea's* company, who was in charge, was somewhat nonplussed. Meanwhile, the seamen in the *Upton* left the ship in their "yawl," and rowing up to the other boat swore they would fire upon the men in her if they did not immediately go away, or if they attempted to hinder their landing; "upon which," say the newspapers of the day, "a most bloody battle ensued." After the two boats had exchanged musketry fire, the merchant mariners actually attempted to board the barge "sword in hand"; but the naval men took full advantage of this mistake in tactics, driving them "upon the off-side" of their boat so that she "overset so far as to

fill." Whereupon the unlucky *Uptons*, who a short time before had declared they would die before they would be taken, surrendered to the number of fifteen, "choosing rather to be press'd than drowned." Probably the "Public Advertiser," of the 15th June, is overstating the case when it says "several on both sides are mortally wounded"; we hear nothing of this afterwards, when the facts were laid before counsel to advise what punitive steps were to be taken. But as the seamen had certainly wounded Watson in the eye, "whereby he lost the sight thereof," and hurt others of the barge's crew, their reception on board the man-of-war, whither they were at once conveyed, may be perhaps imagined. The affair of the *Upton*, however, is chiefly noteworthy for our purpose when read in conjunction with that of the *Tarleton* a few days later.

The *Tarleton*, James Thompson, master, arrived outside Liverpool about the 1st June, and is variously described as from Barbados and Guinea. Perhaps she came from both places, and by applying the doctrine of continuous voyages backwards, a shrewd guess may be hazarded at her trade. The *Winchelsea's* victorious barge, in charge this time of Lieutenant Gideon, was sent to meet her, "being then under sail to come round the Rock of Liverpool." Again, when the barge came alongside, she found a ship's crew armed with blunderbusses, pistols, and cutlasses, one of the ship's guns loaded with grape, and was once more warned in appropriately forcible language to keep off or be sunk. Lieutenant Gideon repeatedly asked for the Captain, but again that officer appeared to have retired to his cabin. The person who said he was the Captain was really James Berry the carpenter, who "in a contemptuous manner waved his hat at the barge, and with his crew gave shouts and cheers or halloas which was (*sic*) attended with many curses and wicked oaths and threats that they would cut any person in pieces who should board them." It is strange that at such a juncture Lieutenant Gideon should have stickled for form; even amidst these wicked jeers he asked whether they would not pay some respect to his Majesty's colours by showing those of the *Tarleton* and lowering their top-gallant sail. This made the *Tarletons* very angry, and apparently impaired their marksmanship; of the volley they fired it is only alleged that "several of the shot fell near the barge and one of them struck the barge's stern-post." It may be that the barge was not particularly close; the "Advertiser," indeed, unkindly suggests that the fight with the *Upton* had not been without its effect, and at any rate one can well imagine that the whole business was little calculated to arouse enthusiasm. Lieutenant Gideon, however, returned the fire, also, it seems, quite harmlessly; and he then rowed back to the *Winchelsea* "to acquaint Captain Drake with what had happened, so that he might have an opportunity of firing upon the *Tarleton* as she passed by,

which was accordingly done, but without success." Presumably, though it is not so stated, the *Winchelsea* was at anchor. Her shots—she fired several guns—had no effect in bringing the *Tarleton* to, and the barge followed the latter up the river at a respectful distance, but near enough to hear her crew "desiring one another to mind their aim" as they fired their muskets. But when the *Tarleton* came to the town of Liverpool her hands "ran her into the dock and they all made their escape from her, by means of which not one of them could be impressed into His Majesty's Service."

The similarity of the two merchant captains' behaviour in repudiating responsibility for the attitude of their respective crews is probably the first point that will strike the reader of this narrative. There is a possible explanation, though it is mere conjecture. The *Tarleton* had only the day before her encounter taken a pilot on board "to bring the vessel round the Rock." He may have acquainted her master and crew with the particulars of the *Upton* affair. He would probably be full of it. As an official person with a reputation to keep up he had (he afterwards said) been scandalised by the *Tarleton's* conduct; he had proposed to lay the *Tarleton's* topsails aback when the *Winchelsea* fired at her, but he only received a curse and a blow with the flat of a cutlass for his punctilio. He kept thus on the windy side of the law.

The "Cases and Opinions, 1701-1781" (printed in Burrell and Marsden's Admiralty Reports, to which we are largely indebted for the foregoing facts) dismiss the pathetic complaint of Mr. Birch from the *Upton's* cabin window that he was shut up there against his will with "it is probable that the master made this declaration only to excuse himself." Yet it was not deemed advisable to proceed against him, perhaps because his men, in spite of his suggested connivance at their resistance, had been all caught. A prosecution against the crew collectively was advised, but there is no record of it; indeed, the Navy having got them, was not likely to send them to gaol. The contemptuous carpenter of the *Tarleton*, James Berry, probably got off with the rest of her crew; we hear no more of him. Against Thompson, the master, precisely the same allegation is made as against the Captain of the *Upton*—that he never attempted to prevent his men from acting as they did, but "retired at the request of his people into his cabin though he was neither compelled so to do nor confined therein." But it was possible to corner Thompson upon another point. It was to be noted that the gravamen of the *Tarleton* case was ingeniously taken to be—not the "opposing and firing upon the *Winchelsea's* boat" as in the *Upton* affair, but the refusal to show her colours and lower her top-gallant sail; though perhaps the circumstance that all the active resisters amongst the *Tarleton's* men had got clear away made the form of the Admiralty's displeasure rather a matter of Hobson's choice.

There remained, however, James Thompson, the master, and Lieutenant Gideon's curiously timed demand for a salute; and Thompson was arrested. From the Register of Admiralty Warrants it appears that two London merchants became bail for him in the sum of two hundred pounds, and a decree was made for his release on the 12th November, 1755. But the case of "Our Sovereign Lord the King in his office of Admiralty against James Thompson now or late master of the ship called the *Tarleton,*" dragged its slow length along (through the eighteen interlocutory hearings devoted to settling the form of the pleadings) until April, 1757—nearly two years after the offence; and then the prosecution is dropped on condition that the defendant—who, by the way, had never been tried—"submits to pay the expenses"!

Perhaps Thompson's London friends came to the rescue again; at any rate the "expenses" were paid, and the merchants released from their bail. The story throws a curious light alike upon the nautical and legal procedure of the time. It seems that neither the resistance of seamen to impressment nor the assumption by merchant officers of a neutral attitude in such encounters were in themselves regarded as very serious matters, except perhaps amongst the civil lawyers at Doctors' Commons with formal views about the royal prerogative. The later opinion which Marryat expresses through the mouth of the Mr. Oxbelly upon a similar occasion in Mr. Midshipman Easy's adventures was apparently in the making in 1755. "That the men have a right to resist if possible," says Mr. Oxbelly, "is admitted; they always do so, and never are punished for so doing. Under the guns of the frigate, of course, we should only have to submit; but those two boats do not contain more than twenty-five men, I should think, and our men are the stronger party. We had better leave it to them and stand neuter."

MACHINE GUN FIRE.

Précis translation from the German official text-book for instruction in War Schools (*Leitfaden fur den Unterricht in der Waffenlehre*), published by permission of Messrs. Mittler and Son, Berlin.

THE machine gun *batteries* are independent and are strictly under the Army Corps commander or the commander of the cavalry division. The machine gun *companies* are attached to infantry regiments, and may be used as regimental troops or attached to a battalion.

Machine guns enable a very heavy fire to be opened on a narrow front and in a short space of time.

In accordance with this organization, machine gun *batteries* are used for special operations, as, with the advance guard, for seizing and holding advantageous positions; in attack for operating on the enemy's flank, for preparing the assault, and as a mobile reserve; in defence, for commanding avenues of approach and dead angles, reinforcing threatened points, preventing envelopment, and repelling the assault; in pursuit for completing the destruction of the enemy, and in retreat for covering the retirement. With the cavalry division machine guns are used in reconnaissance for breaking down resistance, and in the combat for supporting the attack.

Machine gun *companies* are used partly for similar operations on the small scale, partly for the direct support of the infantry in the fire-combat.

The range and fire effect of the machine gun are the same as those of the rifle. The high rate of fire, dense cone of fire, and possibility of putting in several machine guns on a narrow front enable a decisive result at a given point to be quickly obtained, and enable a destructive effect to be produced on large and dense targets even at long ranges.

Machine guns are not well suited to long-continued holding fights.

Engaging well-covered skirmishing lines is to be avoided, as this requires an expenditure of ammunition incommensurate with the result.

Machine guns are not well suited for attacking other machine guns, as these are a difficult target to hit.

In fighting artillery, it must be remembered that the guns have the advantage of superiority of fire at long ranges.

Machine guns can never replace artillery. Their extreme effective range is 2,000 metres.

The successful employment of machine guns requires a quick eye for country, choice of a suitable position as regards field of fire and cover, good distance-judging or range-taking, picking up targets quickly, and opening fire by surprise.

The natures of fire are *group fire* and *continued fire*.

Group fire is a series of 25 shots at the same elevation, corrected if necessary. It is used for finding the range, usually by 1 or 2 machine guns. If observation is difficult, all 6 machine guns fire together at the same point. It is often used against artillery, and never at moving targets.

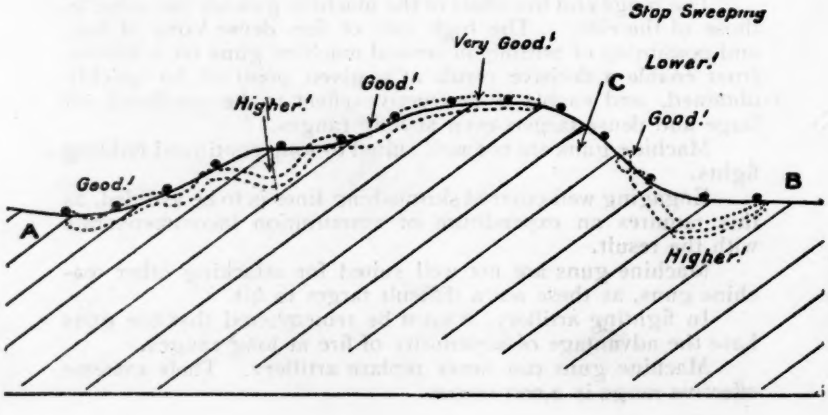
The first sighting elevation is selected so as to give strikes short of the target, and is increased by 100 m. at a time till strikes over can be observed, or until strikes short can no longer be observed, when it is reduced by 50 m.

Continued fire is used for fire effect, at the rate of up to 500 shots per minute for each machine gun. It may be directed on one point, or *sweeping* may be used. The diagram shows sweeping carried out from left to right. At C. the bullet strikes disappear, and the order is given "Stop sweeping! Group fire! Lower!" When the strikes again appear the word "Good!" is given.

Sweeping may be carried out by traversing the machine gun while the firing number continues to look over the sights (usual method); or by traversing, the firing number holding his head high and keeping his attention on the bullet-strikes. The latter is only possible when observation is exceptionally easy.

As a rule only one sighting elevation is ordered by the commander of the battery or company, and each machine gun, using this elevation, gets its cone of fire on to the target.

At deep targets, or when observation is difficult, two elevations differing by 50 or 100 metres (55 or 110 yards) may be used.



In exceptional cases, at long range, 3 elevations differing by 50 or 100 metres (55 or 110 yards) may be used.

The machine gun is laid with a full sight on the ground line of the target; at short ranges a higher or lower aiming point may be ordered.

Distribution and rate of fire. Each machine gun fires at the portion of the target opposite to it; in some cases crossed fire may be used.

The rate of continued fire and the duration of the pauses varies according to the nature and range of the target. In sweeping, the machine gun should be traversed slowly and steadily.

Fire direction and fire control are maintained as long as possible in the hands of the officer commanding the brigade or company.

Section commanders pass orders, order distribution, and correct the sighting elevation of their machine guns.

With good fire discipline it will seldom be necessary to stop the fire of the whole detachment to alter the elevation. This is especially to be avoided at a fleeting target.

Effect. A machine gun battery of 6 machine guns occupies a front of 80 metres; its volume of fire is six times as great as those of the 80 infantry who might be formed on the same front; that is, the fire of the machine gun battery is equal to that of 2 companies of 240 men (war strength).

The cone of fire is denser than that of infantry and easier to observe. *If the cone of fire can be brought on to the target,* the effect will be greater than that of infantry fire and may often be crushing. The dense cone of fire is thus an advantage if the observation is good, and a disadvantage if it is bad.

With good fire discipline, a destructive effect may be produced on troops in closed formation up to 1,500 m. Dense firing lines, standing, suffer severely up to 1,500 m. On firing lines, lying, effect may be produced up to 1,000 m. if observation is good. The effect on artillery is better than that of infantry fire, especially when the guns can be taken in flank.

Well-posted machine guns form a difficult target for all arms. Cavalry charging have no prospect of success against machine guns unless these are taken completely by surprise.

Use in Fortress Warfare. In the fighting round a fortress, machine guns are of great use both to besieger and besieged. Their fire is especially useful for flanking obstacles. Since they will be well protected by good cover and will be kept in bomb-proof casemates when not in use, they may remain efficient for a long period.

Night firing, in combination with search lights, may be effective.

Thus, in the defence of a fortress, machine guns are suitable for all operations close to the fortress, both for frontal defence and for flanking ditches. They are also suitable for supporting

the defence of the nearer foreground, and are useful as saving the expenditure of the forces of the garrison. To repel the assault, they are placed in position behind the breach.

They can also be used offensively by the besieged if they are pushed forward and entrenched by night so as to flank the enemy's lines when they open fire at dawn.

The *besieger* will use machine guns against all infantry firing lines and sometimes at guns in action; also for preventing the relief of the personnel of batteries and the assembly of troops in rear of the enemy's lines. Machine guns will be useful for strengthening the infantry line at points where a sortie is to be expected.

HAND AND RIFLE GRENADES.

Translated from *Streffleurs Oesterreichische Militärische Zeitschrift*, February, 1911, and published by permission.

A. Hand Grenades.

THE hand-grenade, which was used with no little success during the Russo-Japanese War, existed in the most primitive form in the XVth century, and was made of baked earth. In the XVIIth century hand-grenades were filled with bullets of cast iron, or even sometimes of glass and lead, while the covering was of wood or brass. The fuze was of gun-powder, united with coal to retard the burning, and may be regarded as a kind of time fuze. There was also, as early as 1610, a most primitive form of percussion fuze in use, but grenades at this time were almost as dangerous to the man who threw them as to the enemy, and many lives were lost through the premature bursting of grenades. "Grenadiers" needed to be brave and skilled men, and under Louis XIV they were much respected in the army, and received a higher rate of pay than the ordinary soldier. At the end of the XVIIth century special companies, battalions, and even regiments of "grenadiers" were formed, and at the same time we read of specially armed Regiments of "Horse-Grenadiers." Indeed, it was about this date (1700) that the popularity of hand-grenades was at its height. They were extensively employed in the defence of Regensburg in 1634 and of Vienna in 1683, while Vauban used no less than 20,000 hand-grenades in the siege of Namur. The military works of the time shew us that grenades were also made use of in pitched battles, but there they met with little success, and as fire-arms improved, gradually fell into disuse, and by 1760 had completely disappeared from battle-fields.

We know nothing authentic as to their employment in the Napoleonic wars, nor in the wars of '64, '66, and '70. They re-appear again before Port Arthur, at first merely improvised, and later as regular manufactured instruments of war, shimose, dynamite and pyroxilin being among the different materials used for the bursting charges. Accidents from premature bursts and like causes occured. Hand-grenades were used at Mukden, as well as before Port Arthur.

Types of grenades and their employment to-day

Taught by the lessons of the Russo-Japanese War, the military authorities in nearly every country have lately turned their attention to hand-grenades, improved and modernized as they now are, and are on the point of introducing them permanently as a part of the equipment of their armies.

Although many of the conditions of the Far Eastern War can never be reproduced in an European theatre, and although it was largely a war of "positions," one cannot but admit that the hand-grenade has certainly justified its existence.

That a machine which when skilfully used will simultaneously lay low several of the enemy, will be of immense advantage to the side possessing it, seems beyond all doubt.

The next point to decide is whether to rely solely on grenades improvised in the field, after the commencement of hostilities, or to manufacture them in peace, and so always have a supply available.

This point needs consideration, for hand-grenades are no light weight, and the question of their transport at once creates a difficulty. Improvised grenades are certainly cheaper, but on the other hand, they are less reliable in their action, and more dangerous to the thrower, than the manufactured article.

In any case, the recent war has shewn that it is possible to improvise grenades from suitable material, and further, that such grenades can do very valuable service. We may say, then, that it is advisable to collect materials for the making of grenades in peace time.

When one considers that explosives, which can only be carried in the second line transport, are necessary for the improvisation of grenades, and further, that the valuable service which they render increases the *moral* of the troops, and when one considers that troops can be highly trained in their use and can be taught to rely on their effect in peace time, it seems that the issue of grenades to the troops in peace, as well as a provision of adequate material for their manufacture at all times is distinctly desirable.

Steps taken by Foreign Countries.

France and England have already introduced hand-grenades, and have further issued instructions governing their employment.

The French engineers must be proficient both in the art of throwing hand-grenades of every description, and in their manufacture, for it will be left to the general officers commanding in the field to order the manufacture of grenades in accordance with the needs of the situation.

Russia, it appears, has a grenade of similar pattern to the French, and she has also lately interested herself in a design by a Mr. Aasen, of Copenhagen.

Spain and Servia, according to the newspapers, possess a grenade of the Marten Hole type. Servia, moreover, has herself designed a grenade with a quick-match ignition, and has also evinced interest in the "Aasen" pattern.

From Japan, all that is generally known is that a grenade with a percussion fuze is under trial.

Modern Designs

Below is a collection of the particulars of a few modern patterns, as far as they are known, from the various publications and instructions on the subject:—

The present French hand-grenade is a hollow sphere of cast-iron—diameter $3\frac{1}{5}$ inches—thickness of the walls .354 inch. it has an orifice $\frac{3}{4}$ inch in diameter for the reception of the fuze.

Weight of the grenade empty 2lbs. $4\frac{1}{2}$ozs.
,, ,, loaded for use 2lbs. $10\frac{1}{4}$ozs.
Bursting charge 4ozs.

The fuze acts by friction and burns for 5 seconds. The charge is of ordinary sporting-powder. When stored, the fuze is enveloped in a paper cover; and round it is wound the stripwire (*abziehdraht*). There is a drill fuze for drill purposes.

To throw the grenade by hand a leather loop (*bracelet en cuir*) is passed round the wrist, and to the loop a stripstring with a hook is attached. The paper cover is then removed from the fuze, the stripwire (*abziehdraht*) is placed in line with axis of the fuze, the hook of the stripstring is placed in the eye of the friction wire, and the grenade is placed in the right hand with the fuze to the rear. The grenade is then thrown with out-stretched arm. The arm is kept out-stretched until the friction wire leaves the fuze.

In this manner the grenade can be thrown to a distance of 24 yards. It can also be thrown from a sling, provided with a stripstring and hook, to a distance of 55 yards.

The latest reports in French journals speak of a new pattern grenade under trial, which is thrown in an exactly similar manner to the above.

The English pattern grenade has a percussion fuze, with a safety pin, and is slung from a stick 20 inches long. In slinging the arm is raised in an upward direction, care being taken that the tail, which steadies the grenade in flight, does not catch the thrower or any object near. The best angle at which to sling the grenade is one of 45°, in an upward direction, for in this way the greatest range is attained, and further, the action of the grenade is most certain. On percussion, the percussion pin sets back along the body of the grenade and causes the detonation of the cap.

Of grenades manufactured by private firms we may mention the "Hale" and the "Aasen" patterns. Both have percussion fuzes.

The chief property of the "Aasen" grenade is that it cannot explode prematurely during the first 11 yards of its flight, for the safety pin is only withdrawn after the burning of a strip of wool, 11 yards long, with which it is secured, and it is not until then that the percussion arrangement is set free.

There are three methods by which modern grenades are exploded:—

By means of (1) A time fuze;
(2) A percussion fuze;
(3) A friction arrangement.

(1) Although the English time-fuze burns with great regularity and so guarantees certain action, hand-grenades with time fuzes have not been adopted in any other country, except Servia.

The reason for this is very probably that time-fuze grenades have the disadvantage that, if the man throwing them becomes a casualty just at the moment that he is about to throw a grenade, the fuze of the grenade in question will continue to burn, and the subsequent explosion will cause loss in one's own ranks.

Nevertheless, this simple method of fuzing is both effective and easily arranged, and will give excellent results with improvised grenades.

(2) To render the action of hand-grenades with percussion fuzes certain, it is most important that they should strike the ground nose first, and for this reason the centre of gravity of such missiles is always as far forward as possible.

To render these grenades safe in transport they are provided with a safety pin, which is only removed immediately before use.

Other patterns are rendered safe in transport, by only having the cap containing the detonator placed in them immediately before use, or by means of some sort of safety cap, which is removed immediately before use.

(3) The grenades with friction ignition are fairly safe to handle by reason of the fact that the friction wire is not pulled out and so does not ignite the burning composition until the grenade is actually in flight.

In considering the employment of hand-grenades, the extent of their explosive effect and the way of throwing them are of chief interest.

"Grenadiers" have from time immemorial been in danger from the explosion of their own grenades. War requires sacrifices, and the "grenadier" must be prepared for the utmost self-sacrifice, just as are miners, or the crew of an airship, or a submarine. Indeed, certain loss from such causes must be expected. There can be no reason for making a weapon, with such tremendous possibilities, less effective than it might be, simply on humanitarian grounds.

Grenades which can be thrown to a good distance (55 yards) and which have a big bursting charge and a big radius of effect (45 to 55 yards) may endanger the man who throws them and also his comrades, and they may further damage the defences of their own side and render them practicable for the enemy. Good and ample physical and moral effect can be obtained with a grenade having a smaller radius of effect than the

above, and taking these things into consideration, it would seem advisable to be contented with a grenade of smaller local effect.

To increase the range, grenades may be thrown by means of cords or sticks, 16-20 inches long or less.

It is almost impossible to say definitely which method of slinging is the best. Probably, it depends chiefly on the nature of the grenade and on the skill of the thrower. The latter shews itself in the regular flight of the missile and in its striking the ground at the angle most favourable for its effect.

From the accounts published to date of the Russo-Japanese War, we read, with reference to the hand-grenade, that at first 4 to 10 volunteers in each company were equipped with hand-grenades, and that they accompanied the parties sent forward to destroy obstacles, etc.

Reconnaissance parties, patrols, detached posts, etc., also employed grenades in cases of surprise.

It appears from the accounts of the fighting round Port Arthur, that towards the end, hand-grenades had become so familiar, that nearly every man in the fighting line used them. From this we may correctly assume that, contrary to former custom, the special training of men in the use of hand-grenades will be unnecessary.

In France every company or battery has in peace time six empty grenades 18 drill fuzes, and six leather loops with strip-string and hook. Every man is trained in the use of this weapon.

The French training book gives the following instructions with reference to the employment of hand-grenades:—

"The limited range attainable with hand-grenades makes it necessary for the thrower to protect himself from the backward effect of the explosion of the grenade. A fence, or even a door is sufficient protection. If both opponents are in the open, the use of hand-grenades should be avoided; but they are particularly useful against an enemy protected from direct fire, behind an escarpment, or wall, in a house, ditch, or hole in the ground, when the grenade can be thrown in on him.

"They may be used during sorties in force by the mobile troops of the defence against the investing force; during a siege they may be used in less important night operations against the advanced field works of the besieger; and finally, they may be used in meeting an attack, in the hand to hand fight, when excitement renders accurate shooting impracticable."

When one considers the opinions expressed in the French manual, and the deductions therefrom, one cannot but be convinced that hand-grenades may be particularly usefully employed in the defence of a fortress or in the fighting round other obstinately defended fortified positions.

In a pitched battle in the open the progress of the fight will be more rapid, and as hand-grenades, owing to their great weight, will seldom be obtainable in sufficient numbers, and

as it will further be difficult to keep up a fresh supply from the rear, they cannot play a very important part.

B. "Rifle" Grenades.

The numerous accidents which have from the earliest times befallen "grenadiers," led to the idea of projecting grenades from fire-arms or from other small guns.

So early as the beginning of the XVIIth century attempts were made to project grenades from the primitive "Ballista" of early times; later they were shot from grenade muskets and carbines, and finally from small hand mortars.

Colonel Frederick von Geiszler, of the Saxon Artillery, writes in 1718 of attempts to shoot hand-grenades from fire-arms:—

"It is reported that many attempts have been made to accomplish this, but the shock is so great that those who have attempted it have very soon lost all desire to try it again."

"In 1668, before Berlin, he himself fired grenades out of ordinary muskets to a range of 200 yards, the muskets being laid on the ground, and he continued to do the same thing after taking service in the French army, and so gained the approbation of the Field Marshal Turenne."

Finally, grenades were fired from quite short barrels, fixed to planks.

Efforts of a similar nature were made during the Russo-Japanese War, and private manufacturers are seen to be busy also in the solution of the problem.

Speaking generally, "Rifle" grenades are hand grenades shot out of a rifle (carbine).

To make this possible, sticks made of steel, aluminium, etc., and slightly smaller than the calibre of the gun, are attached to the grenades. The stick is then placed in the bore of the gun, with the grenade at the muzzle. The stick with grenade attached is propelled from the gun by means of a cartridge of propelling powder. Either small driving discs or tow wads are used to close the end of the cartridge case.

On firing, the disc or wad drives the grenade before it from the barrel. The percussion fuzes with which rifle grenades are provided, burst on impact and give the same results as hand-grenades, though the effect may be lessened by some of the pieces burying themselves in the ground.

It appears that "Rifle grenades" can be fired to a range of from 200 to 400 metres out of either regulation, or specially adapted shortened rifles, or even from smooth bores. The weight of the grenade and stick varies between 1.1 and 1.7 lbs.

With so heavy a projectile, in comparison to the weight of the weapon, the kick is, of course, very severe, and the butt of the rifle naturally cannot be placed to the shoulder, but must rest on the ground. When shooting, the man kneels or sits down, grasping the rifle at the small of the butt with the

right hand, with the left hand holding the fore-end. The disadvantage of this position is that the man is more exposed to

"DELIVER YOUR GRANADE"

*** Granadier Exercise, 17th Century.**

* Reproduced by permission of Mrs. Wintern, from Colonel Walton's "History of the British Standing Army."

hostile fire in open country, than if he were in the prone position.

However, when firing at a big angle of elevation, the highly-curved trajectory permits of the rifle being fired from behind cover, so that the man need not expose himself at all, as he would when shooting in the ordinary way.

Elevation and deflection are put on by means of specially constructed sights (*e.g.*, the "Aasen" sights), which are generally fixed at the upper end of the fore end. It is obvious that this arrangement may be most inconvenient, when shooting from under cover in a constrained position. The angles of departure may also vary owing to the instability of the rifle and this will affect the depth of the dispersion of the bullets.

The grenades of the "Burgsdorp" pattern, which have been tried at Neudamm, are said to give a lateral dispersion of about 11 yards and a longitudinal dispersion of from 45 to 55 yards. Pederson, Hale, and Aasen, think longitudinal dispersion of no value. However, the forward effect is the very thing which is of importance with this weapon. Private firms also are making further strides and are building light portable mortars to make up for the shortcomings of the inaccurate grenade rifle.

The object of the above remarks is that those who may not have the opportunity of seeing the many different publications on the subject, may have a chance of coming to some decision on the vexed question of hand and rifle grenades. Naturally, in so short an article, anything like detailed descriptions of every type of grenade are impossible.

Allusion has been made to the historical development and the characteristics of the hand-grenade have been described. Their value to-day and the views of the authorities in foreign countries on the subject, as far as we know them may now be considered.

What is asked for is a fair review of the question, without unduly exaggerating the importance of this newly-resurrected weapon. We must consider its future and try and come to some decision as to the correct time and place for its useful employment.

MILITARY EDUCATION.

ANNOUNCEMENT OF EXAMINATIONS.

Qualification Certificates.—An examination will be held in London and Dublin, beginning on or about September 19th, at which candidates not in possession of "Leaving" certificates may present themselves with a view to becoming qualified:—(*a*) To attend the competitive examination for admission to the Royal Military Academy and Royal Military College which will be held in November-December, 1911; (*b*) to enter the Royal Military College if nominated as King's Cadets, King's Indian Cadets, Honorary King's Cadets (British or Indian), or Pages of Honour; (*c*) to attend a competitive examination of officers of the Special Reserve of Officers, Militia, or Territorial Force, for commissions in the Regular Army; (*d*) for nomination to commissions in the Regular Army, from Colonial Military Forces.

Candidates must have completed their 16th year before the 1st September, 1911.

Certificates gained at this examination will not carry any exemption in the case of candidates for admission to the Royal Military Academy or Royal Military College by competition after March 31st, 1912.

A candidate wishing to attend the examination should apply not later than the 19th August 1911, to the Secretary, Army Qualifying Board, care of University of London, S.W., for the necessary printed application form.

Competitive Examination for Commissions.—A competitive examination for officers of the Special Reserve, Militia, and Territorial Force will be held on 10th October, 1911. The periods of attachment and service which each class of candidates will be required to have completed by the 1st of October, 1911, are as follows:—

A candidate in possession of—	Arms.	Attachment to a Regular unit.	Other service in Special Reserve, Militia, or Territorial Force.	Total service.
No Officers Training Corps certificate	Infantry ...	6 months ...	12 months	18 months
	Other arms	12 months ...	6 months	18 months.
Certificate "A" obtained in the Officers Training Corps	Infantry ...	5 months ...	9 months	14 months.
	Other arms	8 months ...	6 months	14 months.
Certificate "B" obtained in the Officers Training Corps.	Infantry ...	3 months ...	7 months	10 months.
	Other arms	4 months ...	6 months	10 months.

The competition will be in the military subjects shown in the syllabus below. A candidate will be required to obtain not less than .4 of the marks allotted to each paper, and .5 of the aggregate. Fifty commissions will be awarded—viz., 8 in the Cavalry; 7 in the Royal Artillery; 35 in other branches of the Service. The wishes of the successful candidates for Royal Artillery commissions—as to appointment to the R.F.A. or R.G.A.—will be considered according to their order of merit, so far as vacancies exist.

Applications (Form M.T./315) should reach the War Office not later than 15th August. A candidate must state whether he will compete:—(*a*) for Cavalry only; or (*b*) for the Royal Artillery (if eligible under paragraphs 3, 4, and 12 or 13 of the Regulations); or (*c*) on the general list for other branches of the Service. Candidates who enter under (*a*) will compete amongst themselves for the Cavalry commissions available, An officer of the Artillery may, if eligible, compete under either (*b*) or (*c*), or under both.

Any candidate not in possession of one of the qualifications laid down in the regulations, but who intends to present himself at the Army Qualifying Examination in September next, will be allowed to enter the competitive examination provisionally. Should he fail to obtain a "Qualifying" certificate his military examination will be cancelled.

The successful candidates will be examined by a Medical Board in London, Dublin, or Edinburgh, and no candidate will be accepted unless he be pronounced physically fit for His Majesty's Service.

SYLLABUS.

The subjects of examination, and marks allotted thereto, will be as follows:—

1. Military History and Strategy.—

	Marks.
(*a*) One general paper on military history and the principles of strategy	500
(*b*) One paper on the Shenandoah Valley Campaign, from April, 1861, to June, 1862, both inclusive	500

The following headings indicate the scope of the examination:—
(*Principles should be illustrated by examples from military history.*)

(*a*) The relation between politics and strategy; (*b*) The influence and limitations of sea power; (*c*) Strategical terms and their meanings;

(*d*) The dependence of successful strategy on:—

(1) A good system of organization for war, and an efficient Intelligence Department.

(2) A method of training such as will provide an efficient instrument to carry out its conceptions.

(3) Secure bases and lines of supply.

(4) Good roads (and, if possible, railways) along the lines of operations.

(*e*) The considerations which dictate the choice of an offensive or defensive attitude; (*f*) the selection of an objective, and of the theatre of operations; (*g*) the relation between the fronts of armies and their lines of communication; (*h*) the manœuvre of turning a flank and its development; (*i*) the breaking of a front and interposition between the parts of a divided front; (*j*) operations on interior and exterior lines; (*k*) combinations resulting from armies operating from divergent bases; (*l*) the modifications in strategic principles which the nationalization of armies and introduction of railways and telegraphs have brought about; (*m*) the influence on strategy of the physical features of a country and configuration of bases and frontiers; (*n*) the influence which moral factors, and especially the personality and characteristics of an opponent, exert on strategy.

2. Tactics. Marks.

(*a*) One paper on the matter contained in "Field Service Regulations, Part I, Operations," together with questions on the history and development of the tactics of the three arms from 1740, inclusive, to the present date. 750

(*b*) One paper on the application of tactical principles to schemes worked out on a map 750

3. Field Engineering.

(*a*) One paper on the subject matter of the "Manual of Field Engineering," 1911 500

(*b*) Application of the principles contained in the above to schemes to be worked out on a map 500

Candidates are advised not to attempt to commit to memory the various formulæ given in the Manual, or the contents of the various Appendices.

When questions involving a knowledge of formulæ or of the contents of the Appendices are set, the necessary formulæ, figures, etc., will be given to candidates.

4. Map Reading, Field Sketching, and Reconnaissance—

Marks.

(*a*) One theoretical paper on the subject matter contained in the "Manual of Map Reading and Field Sketching" 500

(*b*) One paper to test neatness and accuracy in plotting and finishing a military sketch, including the plotting from a field book, drawing a map of imaginary country from data given, with appropriate conventional signs 500

The following headings indicate the scope of the examination:—

Terms and definitions used in field sketching. Conventional signs; Scales; Copying, reducing, and enlarging maps; The principles of field sketching (including—Selection of a base, intersection, re-section, traversing, and all other practical details, inclusive of

those relating to hill sketching); The use of, and methods of working with, prismatic compass and protractor, plane table, and cavalry sketching board; Variation of the compass; Methods of determining the true North; Preparation of sketching paper with magnetic meridians; Method of keeping a field-book; How to plot a traverse; Map reading, and theoretical problems connected therewith, including visibility of points and drawing sections; Reconnaissance and reports; (See "Field Service Regulations, Part I, Operations.")

Marks.

5. **Military Law**—One paper 250

The use of "The Manual of Military Law" and "The King's Regulations" will be allowed for answering this paper.

[*N.B.—Annotated editions and MSS. of any kind, except amendments notified in Army Orders, are strictly prohibited*].

The following indicates the scope of the examination:—The Manual of Military Law, Chapter I., 1-15; Chapter III., 1-33; Chapter IV., 1-11, 18-38; Chapter V., Chapter VI., 8-9, 12-14, 30-40, 46-49, 82-103; Chapter VII., 1-27; The Army Act—Part I; The Rules of Procedure (omitting Field General Courts-Martial).

The King's Regulations—Paragraphs 431-599, 1909, 1916-1925.

6. **Military Administration and Organization**—

Marks.

One paper 250

The following headings indicate the scope of the examination:—

(i.) A detailed knowledge for both peace and war, of the administration, organization, equipment, establishment, terms of service, and pay of:—An Infantry battalion, *or* A cavalry regiment, *or* A Field Artillery brigade, *or* A Garrison company.

(ii.) A general knowledge of the following subjects:—

(*a*) The titles and general contents of official publications, so as to know roughly what each deals with; (*b*) The general system of administration and organization of the army; (*c*) War establishments, and the composition of staffs and units in the field; (*d*) The constitution of the Army Reserve, Special Reserve, and Territorial Force; (*e*) The constitution of the forces in India and the Colonies; (*f*) General principles of recruiting, terms of enlistment, extension of service, re-engagement, prolongation of service, transfer and discharge.

NAVAL NOTES.

BRITISH EMPIRE.

THE KING.

His Majesty the King, who was accompanied by the Queen, the Prince of Wales, and other members of the Royal Family, reviewed the fleet assembled at Spithead on the afternoon of Saturday, the 24th ult., in beautiful weather. This great Armada, which was made up, roughly speaking, of the organized fleets in home waters, viz., the First, Second and Third Divisions of the Home Fleet, the Atlantic Fleet, the First, Second, Third, Fourth, and Fifth Cruiser Squadrons, with the First, Second, and Fourth Destroyer Flotillas, was under the supreme command of Admiral Sir Arthur W. Moore, G.C.B.,, G.C.V.O., C.M.G., Commander-in-Chief at Portsmouth, whose flag was temporarily shifted for the ceremony from the *Victory* to the first-class battleship *Lord Nelson.*

The ships were moored in seven columns, each nearly five miles long. the different units of the fleet being constituted as follows :—

HOME FLEET—FIRST DIVISION.

FIRST BATTLE SQUADRON

First-class battleships—*Neptune* (Flagship of Admiral Sir F. C. B. Bridgeman, G.C.V.O., K.C.B., Commander-in-Chief, Home Fleet), *St. Vincent* (Flagship of Rear-Admiral R. H. Peirse. M.V.O.), *Collingwood, Vanguard, Bellerophon, Superb, Temeraire, Dreadnought* (Flagship (temporary) of Vice-Admiral Sir H. B. Jackson, K.C.B., K.C.V.O., F.R.S., in command of R.N. War College).

FIRST CRUISER SQUADRON.

First-class armoured cruisers—*Indomitable* (Flagship of Rear-Admiral L. Bayly, C.V.O., Commanding Squadron), *Inflexible, Invincible, Indefatigable, Defence.*

FIRST DESTROYER FLOTILLA.

First-class cruiser—*Blenheim* (Depôt ship).

Third-class cruisers—*Boadicea* (Flagship of 2nd-class Commodore Sir R. K. Arbuthnot, Bart., M.V.O., Commanding Flotilla). *Blanche, Blonde.*

Scout—*Patrol.*

Torpedo boat destroyers—*Swift, Afridi, Amazon, Crusader, Maori. Nubian, Saracen, Viking, Zulu, Cossack, Ghurka, Mohawk. Tartar, Basilisk, Beagle, Bulldog, Foxhound, Grasshopper, Harpy, Mosquito, Racoon, Renard, Scorpion, Wolverine, Rother.*

HOME FLEET—SECOND DIVISION.

SECOND BATTLE SQUADRON.

First-class battleships—*King Edward VII.* (Flagship of Vice-Admiral Sir G. A. Callaghan, K.C.B., K.C.V.O., commanding Second Division), *Hibernia* (Flagship of Rear-Admiral G. E. Patey, M.V.O.), *Britannia, Dominion, Hindustan, New Zealand,* (Flag ship (temporary) of Rear-Admiral A. Tate, Admiral Superintendent of Portsmouth Dockyard), *Agamemnon, Lord Nelson*

(Flagship (temporary) of Admiral A. W. Moore, G.C.B., G.C.V.O., C.M.G., Commander-in-Chief Portsmouth, in supreme command).

Second-class cruiser—*Bristol*

SECOND CRUISER SQUADRON.

First-class armoured cruisers—*Shannon* (Flagship of Rear-Admiral Sir G. J. S. Warrender, Bart., C.V.O., C.B., Commanding Squadron), *Achilles, Cochrane, Natal, Warrior.*

SECOND DESTROYER FLOTILLA.

First-class cruiser—*Blake* (Depôt ship).

Third-class cruiser—*Bellona* (Senior Officer's ship, Captain the Hon. H. G. Brand, M.V.O., Commanding the Flotilla).

Scouts—*Adventure, Attentive.*

Torpedo boat destroyers—*Acorn, Alarm, Brisk, Cameleon, Comet, Goldfinch, Hope, Larne, Lyra, Martin, Minstrel, Moy, Neriede, Nemesis, Nymphe, Pincher, Rattlesnake, Redpole, Rifleman, Ruby, Savage, Scourge, Sheldrake, Staunch,*

HOME FLEET—THIRD DIVISION.

First-class battleships—*Africa* (Flagship of Vice-Admiral H.S.H. Prince Louis of Battenberg, G.C.B., G.C.V.O., K.C.M.G., Commanding Third and Fourth Divisions), *Commonwealth, Bulwark, Irresistible, Prince George* (Flagship of Rear-Admiral A. H. Limpus), *Illustrious, Albermarle, Cæsar, Mars, Victorious.*

Second-class cruisers—*Isis, Juno, Latona, Thetis.*

THIRD CRUISER SQUADRON.

First-class armoured cruisers—*King Alfred* (Flagship of Rear-Admiral R. B. Farquhar, Commanding Squadron), *Carnarvon, Devonshire, Antrim, Hogue, Euryalus, Hampshire, Roxburgh.*

FOURTH DESTROYER FLOTILLA.

Third-class cruiser—*Topaze* (Senior Officer's ship, Captain M. L'E. Silver, Commanding Flotilla).

Scouts—*Pathfinder, Skirmisher.*

Torpedo boat destroyers—*Albacore, Bonetta, Bat, Crane, Fairy, Falcon, Fawn, Flirt, Flying Fish, Kangaroo, Leven, Mermaid, Myrmidon, Osprey, Ostrich, Petrel, Racehorse, Roebuck, Star, Syren.*

ATLANTIC FLEET.

First-class battleships—*Prince of Wales* (Flagship of Vice-Admiral Sir J. R. Jellicoe, K.C.V.O., C.B., Commanding), *London* (Flagship of Rear-Admiral S. H. Carden), *Formidable, Implacable, Queen, Venerable.*

Second-class cruisers—*Doris, Venus.*

FIFTH CRUISER SQUADRON.

First-class armoured cruisers—*Good Hope* (Flagship of Rear-Admiral Cecil Burney, Commanding Squadron), *Argyll, Black Prince.*

FOURTH CRUISER SQUADRON

First-class armoured cruisers—*Leviathan* (Flagship of Rear-Admiral E. E. Bradford, C.V.O., Commanding Squadron), *Berwick, Donegal, Essex.*

In addition to above mentioned ships were also present 12 first-class torpedo boats (late coastal destroyers), and 8 submarines.

HOME—*continued.*

There were present in all, 32 battleships, 25 armoured cruisers, 9 protected cruisers, 12 depôt and other ships attached to the destroyer flotillas, 69 destroyers, 12 torpedo-boats, and 8 submarines making a grand total of 167 pennants.

FOREIGN WARSHIPS.

The following ships of war of other Powers were also present as representatives of their respective navies:—

FIRST-CLASS BATTLESHIPS.

AUSTRIA-HUNGARY—*Radetzky* (Captain P. Fiedler); displacement, 14,230 tons; I.H.P., 20,000; speed, 20 knots.

FRANCE—*Danton* (Flagship of Vice-Admiral De Marolles); displacement, 18,000 tons; I.H.P., 22,500; speed, 19 knots.

UNITED STATES—*Delaware* (Captain C. A. Gove); displacement, 20,000 tons; I.H.P., 28,500; speed, 21 knots.

FIRST-CLASS ARMOURED CRUISERS.

GERMANY—*Von der Tann* (Captain Mische); displacement, 19,000 tons; I.H.P., (est.) 55,000; speed, 26 knots (nom.).

GREECE—*Georgios Averoff* (Captain J. Damianos); displacement, 9,680 tons; I.H.P., 18,000; speed, 24 knots.

ITALY—*San Marco* (Captain F. Capece); displacement, 9,680 tons; I.H.P., 23,700; speed, 23 knots.

JAPAN—*Kurama* (Flagship of Vice-Admiral Shimamura); displacement, 14,600 tons; I.H.P., 22,500; speed, 20 knots.

RUSSIA—*Rossya* (Flagship of Rear-Admiral A. Roussine); displacement, 12,200 tons; I.H.P., 18,000; speed, 20 knots.

SECOND-CLASS ARMOURED CRUISERS.

NETHERLANDS—*Jacob van Heemskerck* (Flagship of Rear-Admiral F. Koster); displacement, 4,920 tons; I.H.P., 6,000; speed, 16 knots.

SWEDEN—*Fylgia* (Captain Count Wachmeister); displacement, 4,730 tons; I.H.P., 12,000; speed, 21.5 knots.

ARMOURED COAST DEFENCE SHIPS.

DENMARK—*Olfret Fischer* (Commodore Kofved-Hansen); displacement, 3,590 tons; I.H.P., 4,500; speed, 16.5 knots.

NORWAY—*Eidsvold* (Commodore G. Kielland); displacement, 4,165 tons; I.H.P., 4,500; speed, 16.5 knots.

SECOND-CLASS PROTECTED CRUISERS.

ARGENTINE REPUBLIC—*Buenos Aires* (Commander E. Fliess); displacement 4,626 tons; I.H.P., 17,000; speed, 23 knots.

CHILI—*Chacabuco* (Flagship of Vice-Admiral L. A. Goni); displacement, 4,500 tons; I.H.P., 15,500; speed, 24 knots.

CHINA—*Hai Chi* (Flagship of Rear-Admiral Ching Pi-Kwong); displacement, 4,300 tons; I.H.P., 17,000; speed, 24 knots.

JAPAN—*Tone* (Captain Yamaguchi); displacement, 4,100 tons; I.H.P., 15,000; speed, 23.5 knots.

SPAIN—*Reina Regente* (Captain A. Miranda y Goday); displacement, 5,780 tons; I.H.P., 11,000; speed, 19 knots.

TURKEY—*Hamidieh* (Commodore Sermed Bey); displacement, 3,830 tons, I.H.P., 12,000; speed, 22 knots.

Their Majesties arrived from London at Portsmouth at a quarter to one and immediately embarked on board the Royal Yacht *Victoria and Albert*, which was lying at the South Railway Jetty in readiness. The

HOME—*continued.*

Royal flotilla left the harbour a little after 2 o'clock, the procession of yachts being formed in the prescribed and time honoured order, the Trinity House Yacht *Irene* leading, followed by the Royal Yacht, after which came the *Alexandra,* then the Admiralty yacht *Enchantress,* with the *Fire Queen,* the yacht of the Commander-in-Chief, bringing up the rear. The fleet had dressed ship at noon and as the Royal Yacht approached the eastern end of the columns a Royal salute was fired; the procession steamed down the waterway between columns "E" and "F" (*see* plan), the crews of each ship cheering as the *Victoria and Albert* passed, and the bands playing the National Anthem. His Majesty, who was attended by the First Lord of the Admiralty, the First Sea Lord, Admiral of the Fleet Sir A. K. Wilson, G.C.B., G.C.V.O., V.C., and Admiral Sir L. A. Beaumont, G.C.B., K.C.M.G., First and Principal Naval Aide-de-Camp to His Majesty, acknowledged the salutes from the upper bridge of the yacht, where the Queen and the Prince of Wales were also standing throughout the progress of the Royal flotilla. On arriving at the western end of the columns, the procession turned and steamed to the eastward between lines "C" and "D," and then the *Victoria and Albert* proceeded to her allotted anchorage midway down the line of foreign ships, between the French battleship *Danton,* and the Chilian cruiser *Chacabuco.*

As soon as the yacht anchored, His Majesty received on board the Admirals whose flags were flying in the fleet, including those of foreign powers, as well as the commanding officers of the foreign ships not carrying a flag officer. The reception over, which occupied the best part of an hour, the yacht weighed and the procession left the waterway between the lines for the harbour, a second Royal salute being fired from the fleet as the yacht steamed clear. No mishaps of any kind occurred to dim the splendour of the picturesque and stately ceremonial. The day's proceedings were fittingly brought to a close by the illumination of the fleet, which was witnessed by their Majesties and the Royal party from the Semaphore tower in Portsmouth dockyard.

His Majesty, on his return to harbour, sent the following message to his fleet through the Commander-in-Chief:—

> "I wish to express the gratification with which I have reviewed the fleet to-day, and my high appreciation of the admirable appearance of the ships and the marked precision of the lines."

***

The fleet reviewed by the King was the most powerful that has as yet been assembled; as we have already stated, it consisted of 32 battleships, 25 armoured cruisers, 9 protected cruisers, 69 destroyers, with 12 attendant ships, 12 first-class torpedo-boats, and 8 submarines, a total of 167 pennants.

Some comparative details with the last three great Naval reviews may be of interest:—

At the first Jubilee Naval Review, which was held by Her late Majesty Queen Victoria in person on the 23rd July, 1887, at Spithead, 128 pennants were assembled, of which only 16 were battleships, but of these the greater number were even at that date quite obsolete, and only one, the *Collingwood,* the first of the then new ***Admiral*** class to be commissioned, could be considered as a first-class ship; there was a lamentable deficiency of cruisers, only 9, of which 3 were quite small vessels, being present.

HOME—*continued.*

Ten years later, on the 26th June, 1897, was held another great Naval review at Spithead, in honour of Her late Majesty's Diamond Jubilee, when His late Majesty, then Prince of Wales, inspected the fleet on behalf of the Queen. The ten years which had passed since the first Jubilee review had marked an enormous increase in the strength of our Naval position, and the fleet assembled on this occasion was a magnificent one, a result due to the passing of the Naval Defence Act of 1889, and the completion of what was known as the Spencer battleship programme of 1893, under which the 9 splendid ships of the *Majestic* class were built. There were 136 pennants present, exclusive of yachts and special service vessels. The battleships present were twenty-one,, fifteen of which were the most powerful vessels of their class afloat, and constituted an almost practically homogeneous squadron; nearly as noteworthy as the battleships was, in marked contrast to their deficiency at the review in 1887, the splendid array of cruisers, which comprised no less than twelve first-class vessels of this type, and twenty-four of the second-class, all new vessels with what was then the high speed of between 19 and 20 knots, and eight somewhat older ones; while almost equally noteworthy with the array of battleships and cruisers was the first appearance at a review of a fine flotilla of thirty-one torpedo-boat destroyers, the only ones at that time possessed by any Naval power, and built as an answer to the menace of the large flotilla of torpedo-boats that had been constructed by France.

The fleet reviewed after his Coronation by the late King on the 16th August, 1902, consisted of twenty battleships, twenty-four cruisers, fifteen torpedo-gunboats, thirty-two destroyers, five training ships, and seven brigs—a total of 103 pennants, exclusive of yachts and some small special service vessels. Of this fleet, only two battleships, the *Prince George,* and *Mars,* and two second-class cruisers, the *Doris* and *Juno,* found a place in the fleet reviewed by the King on the 24th ult.

If the fleet assembled for the Diamond Jubilee Review in 1897 showed an enormous increase in power and effective force over that of the fleet assembled in 1887 for the first Jubilee Review, even still more marked is the still greater advance which has been made since the Coronation Review of 1902. And this advance is shown, not only in the remarkable increase of the offensive and defensive powers of the ships themselves, but in the homogeneity of the different units which went to make up the fleet. For practical purposes the First Division (First Battle Squadron) of the Home Fleet, composed as it is of eight turbine-engined battleships of the *Dreadnought* type, with identical armaments and identical speed and manœuvring powers is homogeneous; the same may be said of the Second Division (Second Battle Squadron), consisting as it does of six ships of the *King Edward VII.* class and the *Lord Nelson* and *Agamemnon*; these two last named ships have slightly increased armour protection with a somewhat more powerful armament than the *King Edwards,* but their speed and manœuvring powers are identical. Similarly, the Atlantic Fleet is made up of six absolutely identical ships, except in some minor details, of the *London* class; on the other hand, the Third Division is composed of ten ships, representing no less than four different types of battleship, but this of course, will be remedied as new ships are completed, and take the place of the older vessels in the Second Battle Squadron. It should be noted that the First and Second Divisions of the Home

HOME—*continued.*

Fleet, the Atlantic Fleet, the First, Second, Fourth, and Fifth Cruiser Squadrons and the First and Second Destroyer Flotillas with the Submarines are all in full commission, while the Third Division of the Home Fleet, with the Third Cruiser Squadron, and Fourth Destroyer Flotillas, ordinarily speaking, have only nucleus crews, but have been completed to full complements for the review and the tactical manœuvres which have followed.

THE NAVAL CONTINGENT IN LONDON FOR THE CORONATION:—A Naval Brigade numbering 1,423 officers, seamen, and marines was sent up to London for duty at the Coronation ceremonies. The brigade was under the command of Rear-Admiral Sir Colin R. Keppel, K.C.V.O., C.B., D.S.O., and the parade state was as follows:—

	Officers.	Other ranks.
Rear-Admiral in Command	1	
Staff Officers	4	
Royal Navy	34	613
Colonial Navies	6	90
Royal Marines	28	647
Total	73	1,350

Two bluejacket guards of honour were provided on Coronation day, one at Buckingham Palace, and the other at the Abbey, the rest of the Brigade being employed in lining parts of the route. On the following day, the day of the Royal Procession, a guard of honour was furnished at the Palace, and the Brigade was employed also in lining portions of the route; while a battery of six field guns, manned by bluejackets from the *Excellent*, and followed by sections representing the engine-room ratings of the Navy, the coastguard and non-military branches, and of the Royal Naval and Royal Naval Volunteer Reserves took part in the Procession itself.

His Majesty was graciously pleased to address the following order to Field-Marshal Viscount Kitchener, commanding the Coronation troops, with reference to the presence of the officers and men of the Royal Navy and Royal Marines at the Coronation ceremonies in London on June 22nd and 23rd.

Buckingham Palace, June 29th, 1911

I wish to express how greatly I have been pleased with the smart appearance of the officers, seamen, and marines, who were placed under your command on the occasion of the Coronation. The marching of the seamen on the 23rd was exceptionally good. I desire that this expression of my approval may be conveyed to all concerned.

(*Signed*), George, R. I.

THE PRINCE OF WALES.

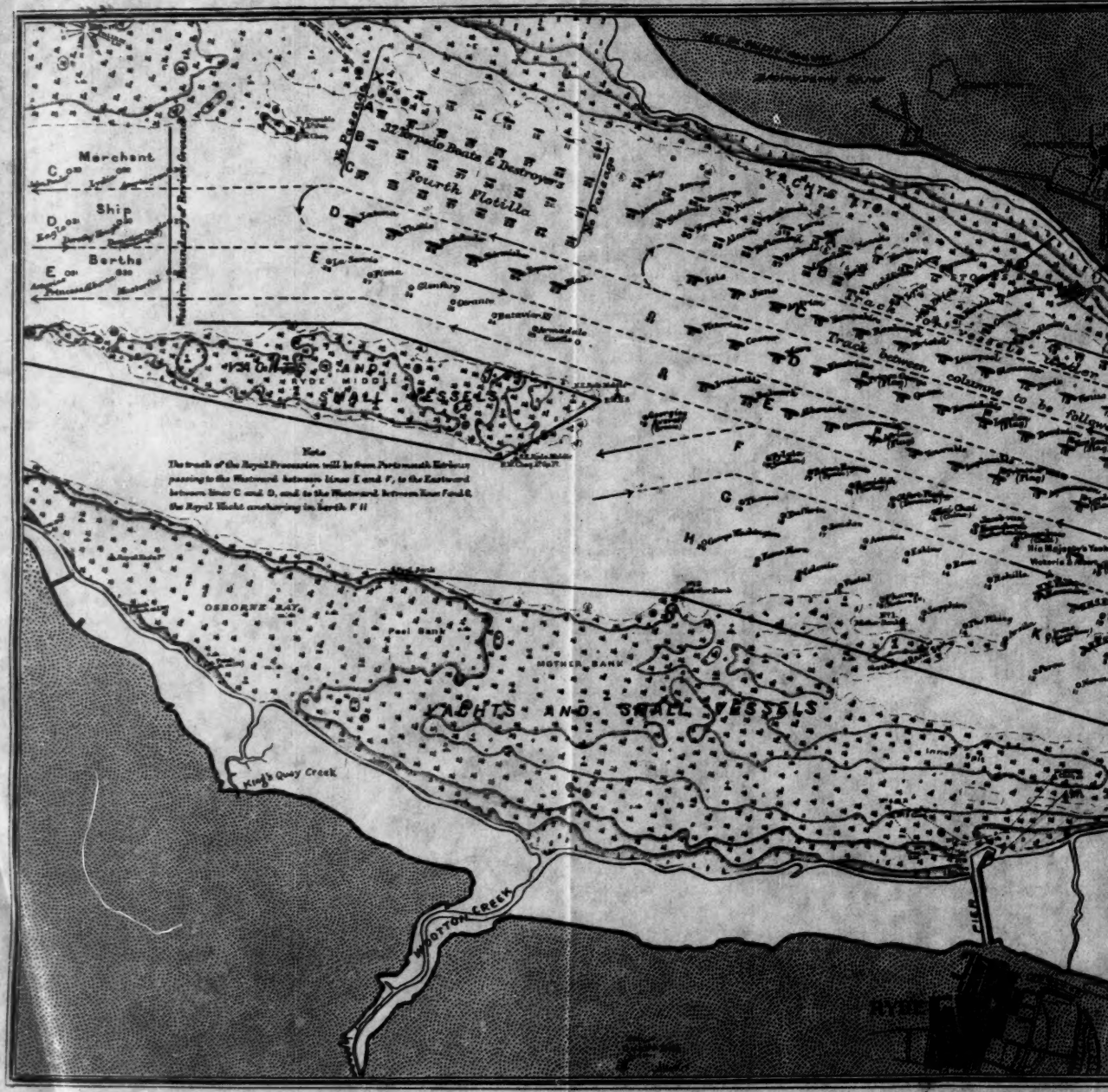
Naval Cadet his Royal Highness the Prince of Wales, K.G., has been rated a Midshipman in His Majesty's Fleet, with seniority of June 22nd, 1911.

Home.

The following are the principal appointments which have been made: Captain C. G. Chapman, M.V.O., to *Venerable*; D. R. S. De Chair, M.V.O., to *Colossus*; A. F. Everett to *Hercules*, and as flag-

POSITION OF THE FLEET AT SPITHEAD C

Journal Royal United Service Institution, Vol. LV.

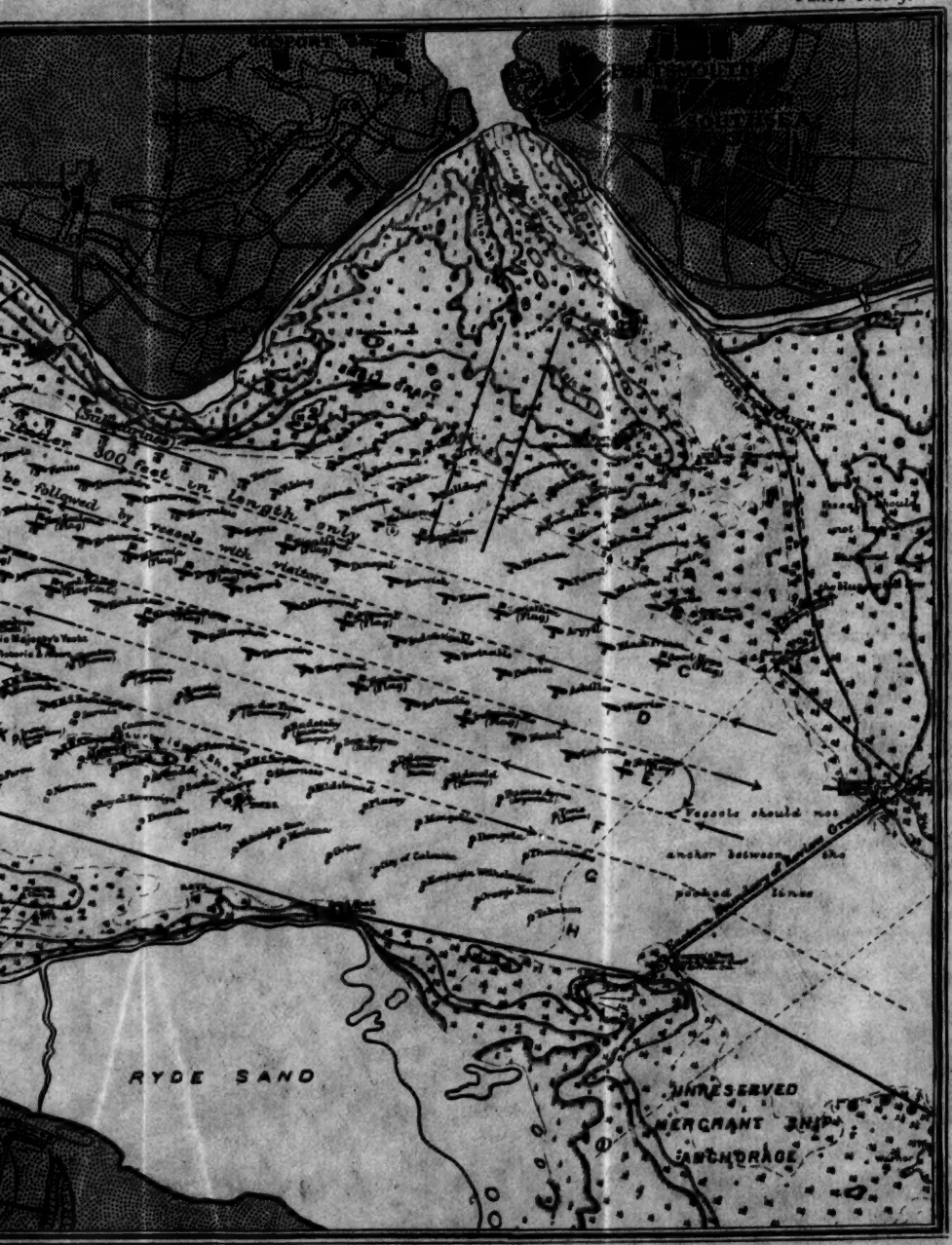

Merchant
Ship
Berths
Western Boundary of Royal Ground
Eastern Boundary of Royal Ground
32 Torpedo Boats & Destroyers
Fourth Flotilla
Track for Vessels
Track between columns to be followed
YACHTS AND SMALL VESSELS
RYDE MIDDLE
Note
The track of the Royal Procession will be from Portsmouth Harbour passing to the Westward between lines E and F, to the Eastward between lines C and D, and to the Westward between lines I and G, the Royal Yacht anchoring in berth F H
OSBORNE BAY
Peel Bank
MOTHER BANK
YACHTS AND SMALL VESSELS
King's Quay Creek
WOOTTON CREEK
PIER
RYDE

Cables

London. Published at the Admiralty, 1st June 1911, under the Superintendence of Rear Admir
Sold by J. D. Potter, Agent for the Sale of the Admiralty Charts, 145 Mi

AD ON THE 24th JUNE, 1911.

PLATE No. 3.



of Rear-Admiral H.E.Purey-Cust, Hydrographer

HOME—*continued.*

captain to Vice-Admiral Sir G. A. Callaghan, K.C.B., K.C.V.O.; H. Grant Dalton to *Pembroke*, and as Captain of Chatham Dockyard.

The first-class armoured cruisers *Achilles* and *Warrior*, of the Second Cruiser Squadron, paid off on the 5th ult, at Portsmouth and Devonport respectively, and recommissioned the following day for a further term of service with the Squadron.

The third-class cruiser *Boadicea*, which flies the broad pennant of Commodore Sir R. K. Arbuthnot, Bart., M.V.O., Commanding the First Destroyer Flotilla, paid off at Chatham on the 5th ult., and recommissioned the following day for a further term of service as Commodore's ship.

THE NAVAL MANŒUVRES.—There are apparently to be no great strategical manœuvres this year. On the Wednesday following the review, the fleet left Spithead, the First Cruiser Squadron with the First and Second Destroyer Flotillas proceeding to Berehaven, where blockading exercises were carried out, which came to an end on the evening of the 1st inst., when the First Cruiser Squadron proceeded to Falmouth for the P.Z. exercises. For these exercises the fleet was divided into two groups, nearly equal in point of numbers, but differing considerably in power. The "Red" fleet with its base at Torbay, consisted of the First and Second Divisions of the Home fleet, with the Second, Fourth, and Fifth Cruiser Squadrons, and was under the command of Admiral Sir F. C. Bridgeman. The "Blue" fleet with its base at Falmouth consisted of the Third Division and one battleship from the Fourth Division of the Home Fleet, with the Atlantic Fleet and the First and Third Cruiser Squadrons, under the command of Vice-Admiral Prince Louis of Battenberg. The exercises began on the 3rd inst., both fleets leaving their bases at 7 a.m., and came to an end on the 6th inst., when Sir F. Bridgeman with the First and Second Divisions of the Home Fleet and the Second Cruiser Squadron proceeded to Kingstown to welcome the King into Irish waters on his arrival on Friday 7th inst, and where they remained during the Royal stay. The remainder of the ships are being exercised by Prince Louis and they will finally disperse on the 21st inst.

In the meantime a series of operations are being carried out at Berehaven, where the six Destroyer Flotillas—164 destroyers in all—with six submarines and four mine-layers, the whole under the command of Commodore Sir R. K. Arbuthnot, Bart., Commanding the First Flotilla, have been assembled. These exercises were to conclude on the 13th inst., when the vessels would return to their respective ports.

FOREIGN POWERS.

GERMANY.

Salving the German Submarine Boat "U 3."

(Précis translation from the 'Marine Rundschau' reprinted from the 'Scientific American.')

ON January 17th, 1911, the German submarine boat "U 3" was sunk in the harbour of Kiel by the imperfect closure of the after ventilation pipe. The depth of water was about 40 feet, and the stern of the vessel penetrated several yards in the soft clay bottom. As the boat sank her irregular movements were observed by the submarine "U 1," which hastened to the spot, launched a folding boat to pick

GERMANY—*continued.*

up the telephone buoy of the "U 3," and then notified a warship, which transmitted the news to the Kiel dockyard so promptly that two steamers and a crane were dispatched 28 minutes after the vessel sank. Meanwhile the imprisoned men had informed the folding boat by telephone that the after part of the "U 3" was full of water. Communication then ceased.

The disaster was observed also by the lookout stationed on the Kaiser Wilhelm Canal and by the canal pilot steamer, which soon arrived on the scene and endeavoured, with the aid of a tug, to tow to shore the foundered submarine, the bow of which had risen to the surface. The attempt failed, as the stern of the submarine was held down by some 100 tons of water. The crane arrived about an hour after the disaster, and with the aid of divers attached to the canal service, preparations to raise the sunken boat were commenced.

It appears probable that the extent of the leakage was not, at first, fully appreciated by the crew of the "U 3," as the partly opened valve was invisible and inaccessible, and the mouth of the ventilation pipe, through which the water entered the hull, was covered and concealed by the motor. Hence the inrush of water could only be heard, and the water was not seen until it had reached the floor of the engine room. It was then too late to take effective measures. The boat sank stern foremost, and its position aggravated the evil by increasing the hydrostatic pressure at the leak, and in other ways.

The tanks, which had been so nearly filled, in preparation for diving, that only one ton of buoyancy remained before the accident, were emptied by pumping and by compressed air. Meanwhile the compartment bulkheads were closed, the emergency weights dropped, and the telephone and lifting buoys set afloat. An attempt was then made to pump out the engine room bilge, but the pump would not "draw," owing to the position of the vessel. The water soon short-circuited some of the accumulators, producing results far more serious than the stoppage of the useless pump. The sudden discharge so heated the forward cells, which were not yet submerged, that several plates became red hot and some of the hard rubber parts took fire. The heated cells evolved suffocating sulphurous and acid fumes, which caused the commander to order a retreat to the forward or torpedo compartment. The commander, with two other officers, remained in the middle compartment and turret and continued the work of emptying the forward tank by means of compressed air until the bow of the boat rose 20 inches above the surface of the water. The 28 men imprisoned in the torpedo compartment owe their lives to this wise and heroic action of Lieut.-Commander Fischer and to the stanchness of the collision bulkhead which separated them from the turret compartment.

At 11.30 a.m., 65 minutes after the accident occurred, an inspector of the torpedo service arrived on the scene and found the sunken vessel in the position described above, with the prow and the periscope emerging slightly from the water and the stern embedded in the clay bottom. Assuming that the crew had taken refuge in the forward compartment, he attempted their rescue by the method illustrated in Fig. 1. The floating crane (represented by the large rectangle) was anchored close to the weather side of the "U 3" and made fast by a chain passed around the submarine with the aid of divers. (The small rectangle represents the divers' boat, moored on the lee side of the "U 3."). Meanwhile other divers were working to attach the main tackle of the crane to the forward lifting hook of the "U 3." The latter task was not accomplished

GERMANY—*continued.*

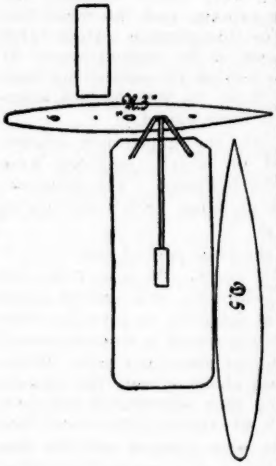


FIG. 1.

until nearly 3 p.m. Soon after that hour the bow of the submarine was slowly raised by hauling on the main tackle and occasionally tightening the chain stirrup until the forehatch was just awash (Fig. 2). The operation was then stopped, in order to communicate with the imprisoned men by tapping, according to the Morse code, on the exposed part of the hull. The first attempts were frustrated by irregular knocking from the inside. It was afterwards learned that the imprisoned men were fastening the bulkhead doors, which opened inward (forward), and consequently did not entirely exclude the poisonous gases which were forced upward from the central compartment by the pressure of the water. After this work had been finished communication in Morse signals was established, and the imprisoned men reported "All is well." When they learned that the bow was out of water, they announced their intention of opening the torpedo launching tubes. Boats provided with sounding lines were then stationed beneath the mouths of the torpedo tubes and the bow of the "U 3" was lowered until these mouths nearly touched the water. Meanwhile the imprisoned men, working by the light of a single pocket lantern, had succeeded in opening the starboard torpedo tube. At 4.30 p.m. the first man was drawn out by means of the sounding line. The work of rescue proceeded smoothly until an increased influx of poisonous gases caused the man who was being drawn out to let go the line and fall back unconscious. A call was then made for volunteers to go down and attach the imprisoned men to the line. In this way several men were rescued by a boatswain's mate, who was finally drawn out unconscious. Two officers, carrying an electric lamp connected with a cable, and a compressed air tube from the "D 5," which was moored beside the crane (Fig. 1), then went down and rescued the remaining men, most of whom were unconscious. The work of rescue was completed at 5.20 p.m. The starboard torpedo tube was necessarily left open.

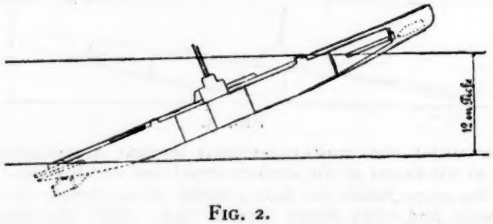


FIG. 2.

Nearly one-third of the men rescued from the forward compartment were unconscious. They were taken to the lower deck of the crane float and revived by oxygen inhalations and other treatment. In less than two hours they were in condition to be removed to a hospital, where most of them fully recovered in a few days.

GERMANY—*continued.*

During the work of rescue preparations were made to raise the stern of the "U 3" in order to rescue the captain and the other two officers who were imprisoned in the turret. For this purpose a stout cable was attached by divers to the after lifting hook of the sunken boat. At the same time efforts were made to put into service the emergency ventilating apparatus, but the attempt failed because, as was learned afterward, the valves in the middle compartment were closed.

Meanwhile, imperfect communication with the imprisoned officers had been established by means of a board on which questions were written and which was held in front of the periscope. The prisoners answered "Yes" and "No" by turning the periscope to left and right, This conversation continued from 2 to 5 p.m.

The hawser which had been fastened to the after part of the "U 3" was attached to a second and more powerful crane. At 5.30 p.m., ten minutes after the last man had left the torpedo tube, this second crane began hauling with great caution, pausing at intervals to give the stern of the "U 3" time to work out of the soft clay in which it was embedded, while the forward crane exerted a steady pull of about 100 tons. When the stern of the "U 3" had thus been raised about 4 feet, the hawser parted and the boat sank back. The divers then substituted two new hawsers for the broken one, and the work of raising the vessel was resumed at 6.30 p.m., but the operation was soon stopped and the fate of the imprisoned officers sealed by the breaking of a post of the after crane.

These two failures proved that the "U 3" could not be raised in this way. Nothing remained but to raise the sunken boat by means of the salvage ship "Vulcan" a sure but tedious method, which practically excluded all hope of saving the lives of the three heroic officers.

The "Vulcan" was used, in connection with the submarines "U 3" and "U 1," as a school of submarine navigation, the pupils and the crews of the submarines being quartered on the "mother" ship. There was good reason for her previous inaction and her absence at the moment of the disaster which need not be explained here.

On the morning when the accident occurred the "Vulcan" was in dock at Kiel, and for this reason the submarines were practising in Kiel harbour, one always remaining afloat when the other dived. The "Vulcan" arrived on the scene at 1.30 p.m., but remained idle because it would have taken her at least six hours to raise the "U 3," which, even in its lowest position (Fig. 3) was too high to allow the "Vulcan" to

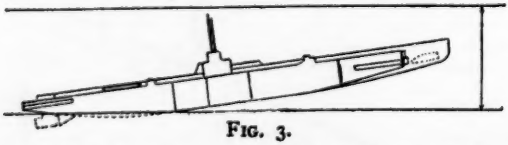


FIG. 3.

employ her usual and most expeditious method of anchoring, at bow and stern, to windward of the sunken vessel and drifting over it.

After the crane broke the best method of employing the "Vulcan" was discussed, and every detail was decided, while the divers detached the hawsers and the sling from the "U 3." The disabled crane was removed and the other crane was drawn back about 40 yards. The scene was brightly illuminated by the searchlights of two vessels. The "U 3" now lay in the position shown in Fig. 3, entirely under water, though

GERMANY—*continued.*

the top of the periscope could be seen just beneath the surface. The positions of the periscope and the bow were marked by small boats.

The difficult work of the divers was not completed until 8.55 p.m. Then the "Vulcan" was brought alongside the remaining crane and attached by bow and stern lines. With the aid of these lines the "Vulcan" was swung around through a right angle, so that she lay parallel to the "U 3," and was held in this position by the starboard stern anchor, which had been dropped midway.

The moorings of the "Vulcan" and the crane were then cautiously relaxed and the two vessels, retaining their relative positions, were allowed to drift towards the "U 3," until the bow of the double-hulled "Vulcan" was directly over the stern of the sunken vessel and immediately behind the periscope (Fig. 4). Now came the delicate task of moving the "Vulcan" forward with one of its twin hulls on each side of the "U 3," without breaking the periscope and thus flooding the turret and central compartment. This manœuvre, the difficulty of which was increased by a strong side wind, was successfully accomplished with the aid of the port stern anchor and several small steamers which served as bow anchors and tugs.

The "Vulcan" was thus brought into position with her hoisting tackle directly over the lifting hooks of the "U 3." The tackle was attached by divers (a task which occupied two hours) and the work of hoisting began at 4 a.m., The turret appeared above water at 4.35, and was opened ten minutes later. The abnormal pressure in the confined space caused an outrush of foul air, which smelled strongly of chlorine. The turret was ventilated with compressed air, a lamp attached to an electric cable was lowered, and two officers entered. They found their three ill-fated comrades dead at their posts in peaceful attitudes, which appeared to exclude all possibility of a death struggle. Although they

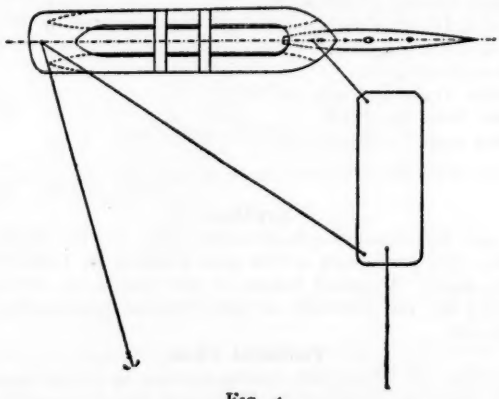


FIG. 4.

had evidently been dead for hours, two hours were employed in fruitless attempts at resuscitation.

After the bodies had been removed, the turret was closed and the "U 3" was securely fastened to the "Vulcan," brought into the inner harbour and docked without difficulty.

MILITARY NOTES[1].

BRITISH EMPIRE.

THE KING.

The King has been graciously pleased, on the occasion of his Majesty's Coronation, to give orders for the following promotions and appointments in the Army, viz:—

TO BE FIELD-MARSHALS.

General Paul Sandford, Lord Methuen, G.C.B., G.C.V.O., C.M.G., Colonel, Scots Guards, General Officer Commanding-in-Chief, South Africa.

General Sir William Gustavus Nicholson, G.C.B., Aide-de-Camp General to the King, Chief of the Imperial General Staff (First Military Member, Army Council).

HOME.

The following was the parade state of the (military) troops present in London in connection with the Coronation of His Majesty, June 22nd.

	Officers.	Other ranks.
Regular Troops	1,487	27,602
Nursing Services	275	——
Special Reserve (Infantry)	119	2,525
Territorial Force (excluding London)	543	9,055
London District (Territorials)	93	1,787
Channel Islands Contingent	6	111
Colonial Contingents	163	1,269
Indian Contingents	387	224
Officers Training Corps	30	1,000
Cadets from Woolwich	18	294
Cadets from Sandhurst	17	388
Total	3,138	44,255

Artillery.

ARTILLERY EXPERIMENTS.—Experiments were carried out on Salisbury Plain on the 17th June, with a field gun, invented by Colonel Deport, of the French Army. A special feature of the gun is an arrangement for compensating for the difference of level between wheels when firing on uneven ground.

Territorial Force.

RECRUITING.—It is officially announced that in a case where men are waiting to enlist in a unit of the Territorial Force which is already up to establishment, the following procedure will be observed:—

(*a*) Serving non-commissioned officers and men may, at their own option, be permitted to transfer to the Territorial Force Reserve at any time within four months of the termination of their current engagement.

[1] Includes notes regarding important political events in foreign countries.

HOME—*continued.*

(*b*) If there are no applicants for transfer under (*a*), a date, which will be four months before the date on which the unit is to begin its annual training in camp, will be fixed by the commanding officer; and non-commissioned officers and men whose current engagements are due to expire before camp must inform the commanding officer, on or before the date mentioned, whether they intend to re-engage, transfer to the Reserve, or take their discharge.

(*c*) After the date fixed under (*b*) a commanding officer may attest recruits in anticipation of vacancies which he knows will occur before camp, but these recruits will be borne as supernumeraries, and will not be clothed until vacancies occur into which they can be absorbed.

(*d*) A non-commissioned officer or man who has given notice may be allowed to extend his service if, by the time he is due for transfer to the Reserve or discharge, his place has not been taken by a recruit.

ADJUTANTS:—It is proposed to abolish qualification at a school of Signalling as a condition of appointment to a Territorial Adjutancy. Officers who have already been appointed on condition of so qualifying will not now be required to do so.

AUSTRALIAN COMMONWEALTH.

COURSES OF INSTRUCTION.—It is announced that educational examinations of candidates for transfer to, or appointment as, Lieutenants in the Administrative and Instructional Staff (officers), will be held in each State where there are candidates during the last week in July.

Seven courses of instruction will be held at the School of Gunnery, Sydney, during the year ending 30th June, 1912, *viz*: 2 short courses of about 13 weeks each; a senior officers' course, a layers course; a D.R.F. course; and an electricity course, of about 13 days each; and a master gunners course of 26 days.

INDIA.

The Military Budget for 1911-12.

The following is a summary of the expenditure estimated for under the Budget for 1911-12:—

India	£15,634,600[1]
Home	£5,188,600
Total	£20,823,200

Against this must be set receipts amounting to £1,248,000, leaving a total net expenditure of £19,575,200, as compared with £19,348,200 in the Revised Budget for 1910-11. Among the reasons given for the reduction are a further decrease in food charges and a reduction in the number of animals to be purchased for army purposes. Some minor economies have also been effected, *e.g.*, by the abolition of the experimental balloon section, and of the remaining mounted infantry schools.

[1]Includes about £8,280,000 for regimental pay, etc.

INDIA—*continued.*

The Home estimates, apart from special services, show an increase of £210,500; there is a largely increased provision for Home stores, including an allotment of £100,000 for new artillery armament.

Under the head of special measures on which further expenditure is proposed in 1911-12 are:—

(*a*) *Measures in Progress.*	£
Provision of maxim guns and mountings	9,300
Rearmament of horse and field artillery	7,600
Extension of dairies	10,300
Formation of signal companies	11,600
Rearmament of Militia	19,700
Purchase of short rifles for regular troops	68,900
Reconstitution of reserve of artillery horses	17,500
(*b*) *New Measures.*	
Panoramic sights for mobile artillery	10,000
Web equipment for British Infantry in India	10,000
Rearmament of artillery	100,000
Divisional artillery staff for 6 divisions, and an Inspector of mobile artillery	7,600
Employment of 4 more lieutenant-colonels R.G.A.	5,500
New pattern bayonet for British troops	6,700
Replacement of aged horses in British cavalry regiments.	19,300

Political.

AFGHANISTAN.—It is reported in the Indian Press that the Amir has introduced compulsory military service on a basis of one man to every eight throughout Afghanistan.

BURMA.—A raid from Chefang across the Burma-Yunnan border by two or three hundred Kachins from Chinese and British territory, due to inter-tribal disputes on the British side of the border, took place in March. The raiders were driven from their stockades by Military Police, and returned across the border, where the Chinese authorities have undertaken to deal with them. The feud is reported to have been a purely local one.

FOREIGN POWERS.

ABYSSINIA.

The report of the death of Ras Tesamma, the regent, is now confirmed. The government is being carried on by Lij Yassu, Menelik's grandson, acting on the advice of the Council of Ministers.

AUSTRIA-HUNGARY.

Political.

ELECTIONS.—The chief features of the Austrian General Election, which has just taken place, are the gains of the German Progressives and Liberals, the return of the Czechs with undiminished strength, and the

AUSTRIA-HUNGARY—*continued.*

defeats sustained by the Christian Socialists, who have lost 17 of the 20 seats previously held by them in Vienna. As a result of the defeat of so many of its supporters, the Government under Herr Bienerth has resigned.

Military.

MISCELLANEOUS.—The 21st Cavalry Brigade, consisting of the 9th Dragoons and the 1st and 4th Ulans, has been placed directly under the orders of the commander of the XIth Corps (Lemberg).

Experiments have recently been carried out with a new 30.5 cm. siege mortar. The gun forms 3 loads for purposes of transport by an automobile. It is stated that the result of the experiments has proved the mortar to be very satisfactory in regard to precision and effect, as well as simplicity of working, and it will shortly be adopted in the army.

BELGIUM.

Political.

NEW GOVERNMENT.—Monsieur Schullaert's government having been defeated on the Education Bill, a new Cabinet has been formed by Monsieur de Broqueville. The new Ministry belongs to the Catholic party, which have held office in Belgium for over 20 years, and contains five members of the old Cabinet, including General Hellebaut, the Minister for War. It is generally regarded as a provisional Ministry which will carry on the government of the country until the general election in May, 1912.

Military.

REORGANIZATION OF INFANTRY.—According to a recent Army order, it has been decided to abolish the reserve battalions, and to replace them by active battalions. Each infantry regiment, other than the Carabineers, will thus consist of 4 active battalions, 2 fortress battalions, and a depôt; but in each active battalion the 4th company will only have its "Cadres" in peace, and will not really exist, except on mobilization or for manœuvres. The men destined for these 4th companies will be trained in the other 3 companies of the battalion.

The Carabineer regiment will consist of 4 active battalions, with an organization similar to that described above, 1 cyclist battalion, 3 fortress battalions, and a depôt. The cyclist battalion will consist of the present 4 cyclist companies, one of which has hitherto been attached to each battalion of the Carabineers.

BULGARIA.

FRONTIER.—Notwithstanding the assembly of the recent frontier Commission, collisions still continue to occur on the Turco-Bulgarian frontier. In one of these, at Demirkeui, a Bulgarian officer was shot by a Turkish patrol.

CHINA.

Communications.

RAILWAYS.—According to the *North China Herald*, the bridge over the Huai River (crossed by the Tientsin-P'u-k'ou Railway) is now completed, and was tested on 15th May last. The results were entirely satisfactory. The total length of the bridge is 1,876 ft. between abutments, and it consists of nine spans, each of 200 ft. clear. It is probably, with

CHINA—*continued.*

the exception of the bridge over the Yellow River, the most important railway bridge in the country.

It is anticipated that by the end of August of this year there will be a continuous completed line of railway from P'u-k'ou to Hsü-chou Fu, a distance of 211 miles.

DENMARK.

REARMAMENT.—The issue of the converted 1889 pattern rifle, adapted for the pointed bullet, has been completed.

It is reported that a new rifle has recently undergone satisfactory trial. This rifle is a repeater, made in the Danish Small Arms Factory; it is sighted up to 2,100 metres (2,296 yards), and has a clip for 8 cartridges.

RECRUITING.—The annual contingent for 1911 will be as follows:—

Infantry	8,000 men.
Cavalry	600 ,,
Artillery	1,600 ,,
Engineers	300 ,,

FRANCE.

Political.

FALL OF MINISTRY.—During a debate in the Senate, General Goiran, the Minister of War, stated that there was no intention of appointing, in the event of war, a Commander-in-Chief of all the French Forces. There would only be a Commander-in-Chief for each theatre of operations, while the general direction of the combined armies would be exercised by the Government through the Minister of War, assisted by the Chief of the General Staff. This statement gave rise on the 23rd June to a debate in the Chamber and the Monis Ministry was defeated; a result which was apparently due more to political causes than dissatisfaction with General Goiran. The Ministry resigned, and the President of the Republic asked M. Caillaux, Minister of Finance under M. Monis, to form a new Government M. Caillaux accepted, and the new Ministry was completed on the 27th. M. Messimy has become Minister of War.

Military.

APPOINTMENTS.—The past month has seen several changes in the higher appointments of the French Army.

General Laffon de Ladébat has ceased to be Chief of the General Staff, since he will shortly occupy in the "Conseil Supérieur de Guerre" the place of General Percin, who has to retire for age. General Dubail, lately in command of the 14th Division at Belfort, has been appointed Chief of the General Staff.

General Perruchon, from the command of the 40th Division, has been promoted to the command of the 6th Army Corps, vice General Goiran, appointed Minister of War.

General Mercier-Milon, lately in command of the Constantine Division, has been appointed Commander of the 15th Army Corps, vice General Andry deceased.

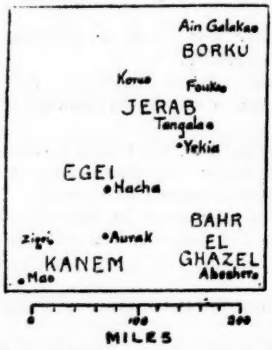
ARMAMENT.—The dragoon regiments in the Cavalry Division are shortly to be given a new lance, which is made throughout of steel, and is said to be lighter, stronger, and better balanced than the bamboo lance at present in use.

FRANCE—*continued.*

It has been recognised that the shield on the 95 m/m Q.F. gun did not afford sufficient protection to the personnel, and it has been decided to strengthen it by adding bullet-proof steel plates round the axis of the gun

FRENCH COLONIES.

OPERATIONS IN WADAI.—At the end of June news reached France of Captain Cauvin's successful attack on a force of Arabs who had been raiding the northern parts of Wadai (9th February to 7th March). Captain Cauvin, at the head of some 200 men of the Camel Corps, had to make a most difficult march of 13 days across the desert from Ziguei, his base, via Yekia and Tangalea, to Fuka, near the Borku district, where he surprised and defeated the raiders, killing 4 Arab chiefs, and capturing many camels. The French loss was 1 corporal killed and 9 men wounded, while 1 man died on the march. Captain Cauvin misled the enemy by the secrecy of his march. He first of all marched 15 miles due east, announcing that he was proceeding to Abesher. Then, in thick bush, he suddenly altered his direction, and proceeded north-east by forced marches.



EQUATORIAL AFRICA.—During the debate on the Colonial Estimates in the spring of this year, M. Messimy stated that the Government policy is to hold Abesher, but to make no further advance either to the east or north. Orders had been sent forbidding every occupation of Tibesti or Borku, while negotiations would be opened with Doudmurrah, the former Sultan of Wadai. It has been decided to construct a telegraph line between Fort Lamy and N'Guigmi on the eastern shore of Lake Chad. Communication between Fort Lamy and Abesher will be maintained by heliograph.

GERMANY.

Political and General.

THE REICHSTAG.—The Bill granting a constitution to Alsace-Lorraine was finally passed by the *Reichstag* at the end of May. The main provisions are as follows:—

Alsace-Lorraine has three votes in the Federal Council, subject to certain limitations.

The head of the Government of the Reichsland is a *Statthalter*, who is appointed by the Emperor.

There are two Chambers, and every law must be assented to by the Emperor and these two Chambers.

The members elected to the *Reichstag* will continue to be elected.

The *Reichstag* passed the Insurance Bill on May 30th. The Bill provides for compulsory insurance against illness of all employees whose annual income is less than £100.

The *Reichstag* adjourned on May 31st until October 10th.

GERMAN FINANCE.—The final accounts of the Imperial Central Treasury for the financial year of 1910, show a surplus of £5,885,000. Customs

GERMANY—*continued.*

and taxes yielded an increase of £2,875,000, while the profits of the Imperial Posts and Railways showed increases of £985,000 and £590,000 respectively.

Military.

MANŒUVRES IN 1911.—In addition to the Imperial Manœuvres (some particulars of which appeared on page 809 of the JOURNAL for June), the following manœuvres are to take place during 1911.

Two cavalry divisions to exercise on the training ground at Alten-Grabow, attached to the IVth Army Corps.

One cavalry division to exercise at Munster and Posen respectively, attached to the Vth and Xth Army Corps respectively.

Each division to consist of three brigades of two regiments, each with a brigade (*Abteilung*) of horse artillery and a battery (*Abteilung*) of machine guns.

The cavalry divisions of the IVth Army Corps (*i.e.*, the Guard Cavalry Division and Cavalry Division "A") are to manœuvre together during the last four days under the direction of the Inspector-General of Cavalry.

Cavalry reconnaissance manœuvres are to take place in Alsace-Lorraine under the direction of the Inspector-General of Cavalry, who will have five brigades of cavalry at his disposal—*i.e.*, the 29th, 31st, 33rd, 34th, and 39th.

Pioneer manœuvres of the 2nd and 3rd Pioneer Inspections will take place near Metz and Küstrin respectively.

Fortress manœuvres (no field firing with ball cartridge) will take place at Thorn, under the orders of the G.O.C., XVIIth Army Corps, together with an exercise by the communication troops in building a normal gauge railway. These manœuvres are to begin on September 18th, and to last five days.

All the infantry troops taking part in these manœuvres are to be back in their stations by September 30th at latest, in order to allow of the men who have completed their period of colour service being discharged to the Reserve before the 1st October.

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An order has been promulgated directing that officers should not be kept too long in the small frontier stations.

There has recently been considerable discussion in the press and in the *Reichstag* over the shortage of medical officers. It is stated that the shortage in the field ambulances amounts to 49.8 per cent.

ITALY.

Military.

PEACE ESTABLISHMENTS.—The Army Estimates for the financial year 1911-12, fix the peace establishment at 240,000 men, a higher average effective strength than has ever been attained before, though still considerably below the establishment of 272,269, laid down by the Cadre law. . . An examination of the Budget establishments shows the following deficiencies from the Cadre establishments in the various arms. Infantry, 16 men per company; cavalry, 28 to 29 men per squadron; artillery, 20 men per battery; engineers, 12 men per company. These deficiencies might not appear very serious were it not that the peace establishments of units fixed by the Cadre law are already very low, as compared with those of

ITALY—*continued.*

other military States. The addition of the 31,000 men (in round numbers) necessary to supplement the deficiency would, however, require an additional expenditure of £514,625, a sum which the State is not in a position to afford.—*Précis from Internationale Revue über Gesamten Armeen und Flotten*, June, 1911.

MAROCCO.

France and Marocco.

POSITION AT END OF MAY.—The position at the end of May was as follows :—

At Fez, General Moinier's relief force of some 8,000 men together with the original garrison of some 7,000 Moorish levies under Colonels Mangin and Brulard. To this must be added the escort of Colonel Gouraud's convoy (3 battalions, 1 squadron and 1 battery) which arrived about 24th May.

At the base and on the Line of Communications General Ditte with about 19,000, besides reinforcements constantly landing, with 4 posts between Fez and Mehedia.

In the Gharb country a " mehalla " under Captain Moreaux operating against Tazzia, a pretender.

MAROCCO—*continued.*

On the Algerian frontier, General Toutée with 9,000 troops on the Muluya, at Taurirt and Debdu.

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On May 29th General Moinier, leaving behind in Fez the "Goums" 1 battalion, 1 section artillery and Colonel Mangin's force, marched in a westerly direction, and after some skirmishing reached Beni-Amar, where he established a post defended by 6 companies, 2 troops of spahis, and 1 battery.

Under cover of these operations Colonel Brulard marched down the line of communications and took over a full convoy, on the Sebu river, handing over an empty one for Lalla Itto.

On June 2nd General Moinier started on his return journey to Fez, marching in 3 columns. He was attacked throughout the day by fractions of the Beni M'Tir and during the fight the French lost 1 medical officer and 3 men killed and 14 men wounded. The Zouaves and Foreign Legion distinguished themselves on this day. After 2 days' rest, General Moinier left Fez on June 5th with about 6,000 men for Mequinez, via Sefru, The Moors again attacked him, and, although their assaults were easily repulsed, the French lost 6 killed and 18 wounded. On the 7th and 8th June the French fought their way across the Medooma river into Mequinez, losing 1 killed and 14 wounded. The pretender Mulai El Zin surrendered to General Moinier. On the 11th June the latter left Mequinez for Fez, where he arrived on the 15th having met with no further opposition. Mequinez has been given a garrison of 2 companies, 2 mountain guns and some 1,000 horsemen belonging to the Shawia "goums" and the "mehalla."

There was a prolonged halt at Fez and it was not until the 22nd June that General Moinier again left Fez with a view to forming a post in the Beni M'Tir country.

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While the above operations were taking place around Fez, Captain Moreau with his "goums" marched against the pretender Tazzia and defeated him south of Alcazar.

The line of communication between Rabat and El Kunitra has been frequently attacked and General Ditte found it necessary to send a strong reconnaissance (9 companies) into the Mamora forest. This force had, on June 19th, an engagement in which the French, while dispersing a large body of Moors, lost 1 killed and 6 wounded.

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On the Muluya side, General Toutée's force has been withdrawn, leaving behind the following posts:—

Merada ford	1,500 men.
Taurirt	1,800 men.
Debdu	1,200 men.

It was semi-officially stated in the *Matin* that the object of this force had been accomplished: viz, to contain the tribes in the north-east and prevent them from joining the enemy in the western theatre; and to form a reserve ready to act if General Moinier's force proved insufficient.

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On the whole, conditions in the Northern part of Marocco are gradually becoming quieter, although the occupation of Alcazar by a Spanish

MAROCCO—*continued.*

force (see below) has somewhat complicated matters. Many sections of tribesmen have tendered their submission, and consequently it has been found possible to begin the enlistment of recruits for the new Moorish Army which is to be under French officers.

Spain and Marocco.

Owing, it was officially stated, to the anxiety caused in the country round Alcazar by the depredations of the pretender Tazzia, the Spanish Government decided to send the cruiser *Cataluna* with a transport conveying 400 troops to Larache; additional troops were despatched two days later in the *Terror*. On the 8th June, in consequence of reports of further disturbances, 500 Spanish troops were disembarked in the ships' boats, assisted by local craft, and marched 20 miles inland to Alcazar. Further reinforcements were despatched about the 13th and 22nd, and at the end of June the Spanish forces, which are under the command of Colonel Silvestre, numbered 800 infantry, 150 cavalry, 2 sections of field artillery, and one wireless telegraph section. The Sultan protested against the landing as a violation of treaties; the Spanish Government has stated that its only object is to maintain tranquility in this region.

Germany and Marocco.

During June the attitude of the German official Press as regards French action in Marocco was, generally speaking, one of reserve. The Pan-German elements clamoured for vigorous German intervention, especially after the action of Spain in landing troops at Alcazar.

On the 2nd July it was announced that the German Government had sent the gun-boat *Panther* to Agadir, a fort at the mouth of the Suss valley, in order, it was officially stated, to safeguard the German interests in this quarter. On the 5th July news was received that the cruiser *Berlin* had been ordered from Kiel to take the place of the *Panther* in order that the latter might return to be docked.

MONTENEGRO.

The drastic measures adopted by the Turks towards the revolting Albanian tribes, known collectively as the "Malissori," near the Turco-Montenegrin frontier, have caused a difficult situation. The frontier is, to a large extent, artificial, and, in some of the mountainous districts, has never been defined, while the revolting tribes are in many cases related to the Montenegrins. Many armed Albanians are already in Montenegrin territory, and the situation would become serious if the insurgents were driven across the frontier in large numbers. It is, however, believed that King Nicholas himself wishes for peace, and it is to be hoped that he may be able, by his personal influence, to restrain the more fiery spirits among his subjects.

OTTOMAN EMPIRE.

The Albanian Rising.*

On the 12th June the Sultan arrived at Uskub, and was enthusiastically greeted. Events now assumed a less threatening aspect; a second proclamation was issued offering the rebels a further period of grace in which to submit, and a sum of £30,000 for distribution among the clans.

* See sketch map on page 810 of June JOURNAL.

OTTOMAN EMPIRE—*continued.*

A well-known chief, Issa Boletinaz, came in and surrendered. A great review of the troops was held on the historic plain of Kossovo.

In spite of the proclamation, fighting continued in many quarters. The northern Turkish column, acting from Gusinje, appears to have practically joined hands with the Scutari column. Some 8,000 reinforcements are said to have landed at Scutari between the 1st and 15th June, making a total strength of 45,000 men with 80 guns under Torghoud Pacha. The latter stated that he would have 70,000 men and 120 guns by the middle of July.

In the latter part of the month (about 25th June) a conference of the Albanian refugees in Montenegrin territory was held at the instance of King Nicholas. From the result it appeared that the "Malissori" were by no means disposed to accept the terms offered, especially those relating to the surrender of arms. They alleged that they distrusted the bona fides of the Turkish Government, and that the devastation of their homes has been so complete that there is no inducement for them to return. With regard to the allegations of undue severity which have been made against Torghoud Pacha, that general telegraphed to the *Times*, dated Kopliku, 26th June, protesting that he had treated the rebels with leniency and humanity, "like spoilt children." "How could they have escaped utter destruction," he writes, "when I had surrounded them with my 3 divisions in a circle of steel, if I had not left open for them a wide exit towards the Montenegrin frontier?"

On the 29th June it was reported that the Turkish general was preparing a new enveloping movement against the rebels still in the field.

The Revolt in Yemen.

Although no further fighting has occurred in Yemen proper, it appears from telegrams to the *Times* between May 28th and June 17th, that the insurgents captured Abha, the capital of Assyr, about the end of May.

On June 15th it was announced that the levies of the Grand Shereef of Mecca, reinforced by ten battalions under Nishat Pasha, would advance from Kumfida against Abha. Mahomed Ali Pacha, the Vali of Yemen and Commander-in-Chief, was to direct operations from Gesan, where he would have a force of 11 battalions and 6 guns.

The rebel Arabs surprised Mahomed Ali's advanced guard, consisting of 4 battalions with 4 guns, which was encamped 3 miles from Gesan, and pursued them to that town, retiring after having captured 4 guns, 2 maxims, 2,000 rifles, besides inflicting a loss on the Turkish forces of 1,000 killed, and 500 wounded.

PERSIA.

STATE OF THE COUNTRY.—No permanent improvement in the unsettled state of the country generally is indicated; trade routes remain unsafe.

The unstable position of the Sipahdar as Premier and Minister for War culminated in his leaving Teheran suddenly on the 15th June for Europe, ostensibly for reasons of health.

A body of Persian soldiers, apparently to draw attention to grievances against the Persian Government in connection with their pay, attempted to force an entrance into the British Consulate at Shiraz on 10th June.

PERSIA—*continued.*

Shots were exchanged between them and the Consulate Guard, who expelled them from the Consulate. One Persian was killed, and two were mortally wounded, while one Sepoy was wounded.

The incident does not appear to have special political import, and seems now to have been settled.

FINANCE AND CUSTOMS.—Extensive powers have been conferred by the Mejliss on Mr. Morgan Shuster, the American Treasurer-General, which seem likely to ensure his effective control of every department of the financial administration of Persia. Four more financial experts are being obtained from America.

It is reported that negotiations are in progress with a view to the appointment of a further number of Belgians as officials in the Persian Customs Administration.

RUSSIA.

Political and General.

The Emir of Bokhara arrived in St. Petersburg on the 24th May to present himself to the Tsar as the new ruler of the Khanate. He was promoted Major-General on the 27th idem, the day he had audience of the Tsar. He returned to Bokhara by the 14th June.

The Khan of Khiva arrived in St. Petersburg on the 8th June, and had audience of the Tsar on the 12th idem.

The Crown Prince of Siam visited St. Petersburg from the 4th to the 16th June, on his way to London. He was met by his two cousins, one a cornet in the Life Guard Horse Regiment, the other a student at the Imperial Military Medical Academy. He had audience of the Tsar on the 6th June.

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RUSSIA AND TURKEY.—Turkey's verbal reply to the Russian representations, regarding Turkish military activity on the Montenegrin frontier, was received in St. Petersburg by the 29th May, on which date explanations regarding that reply were given in the Turkish Chamber, by the Grand Vizier and the Minister for Foreign Affairs. On the 1st June the "Novoe Vremya" was authorized to state that the Russian Cabinet considered the explanations satisfactory, and the incident closed.

RUSSIA AND JAPAN.—On the 1st June an Extradition Treaty between Russia and Japan was signed at Tokio. Political offenders are not subject under this Treaty to extradition, except for a crime against the person of the Sovereign.

THE ZEMSTVO BILL.—According to the emergency clause of the Constitution, under which the Zemstvo Bill was promulgated by Imperial Ukaz, the Bill should have been presented for ratification to the Duma within two months, viz., by the 26th May. In order to avoid possible opposition, M. Stolypin secured the closing of the session of the Duma on the above mentioned day—a month before the usual date—and 3 hours later the Bill was actually introduced. All possible steps are now being taken to give effect to its provisions, and the Elections for the Zemstvos will be held next month so that the Duma may be faced with the accomplished fact when it reassembles in the autumn.

RUSSIA—*continued.*

PAN ISLAMISM.—Prosecutions are being instituted against individuals concerned in Pan Islamic propaganda in the Governments of Vyalka Kazan, and Orenburg. The movement is reported to be spreading along the Volga, and in the Caucasus.

Military.

General Sukhomlinov, the Minister of War, returning from his visit to the Far East, reached St. Petersburg on the 7th June.

APPOINTMENTS.—Lieutenant-General Leonid Artamonov, formerly in command of the Fortress of Kronstadt, has been appointed to command the 1st Army Corps. He served in the Geok Tepe Campaign under Skobeleff, with the Russian Mission to Abyssinia in 1893, and in the Russo-Japanese War. He is succeeded in the Kronstadt Command by Lieutenant General Nicholas Nikolensko, an Engineer Officer who served in the Russo-Turkish and Russo-Japanese wars.

INSPECTORS OF ARTILLERY.—Army Order No. 133 of 1st April, 1911, provides for the appointment of an Inspector of Artillery for each Army Corps. Officers holding these appointments will be graded as Divisional Commanders, and will be under the immediate orders of the army corps commander, to whom they will report direct. They will be responsible for the technical training of all the artillery units of the Army and for their armament.

MECHANICAL TRANSPORT.—Eighteen vehicles have been purchased, and will be subjected to trials in July. These vehicles were supplied by nine different firms; they are of either 3 or 5 tons capacity, and have motors of 20 to 30 horse power. After the trials £85,160 will be expended in the purchase of additional vehicles of the types which prove most satisfactory.

A Mechanical Transport Instructional Company has been formed to train officers and men of the railway troops in the use of motor vehicles. The company is commanded by a lieutenant-colonel, and has an instructional staff of seven officers.

SUMMER TRAINING.—The programme of summer training for 1911 is as follows:—

Units will move into camp during May in European Russia, and somewhat later in other parts of the Empire.

For the first 2½ to 3 months in camp (May to mid-August) the three chief arms will train independently. Combined training will follow, lasting for 2 or 3 weeks during August; after which mobile camps of exercise for all arms will be formed, lasting a fortnight (August and September). On the last 5 days of this fortnight, "Grand" Manœuvres take place in the Vilna, Warsaw, Kiev, and Priamur Military Districts under the supervision of the General Officer Commanding of each District.*

Special Cavalry manœuvres will take place from 11th to 17th September in two localities near the frontier, one about 75 miles south-west of Vilna, and the other about 125 miles west of Kiev.

FORTIFICATION OF VLADIVOSTOCK. A large number of workmen have been brought from European Russia to work on the fortifications of Vladivostock.

REORGANIZATION OF THE IMPERIAL MILITIA.—Army Order No. 138/1911 promulgates a new law, dated 14th March, 1911, regarding the Imperial Militia (Military and Naval "Opolchenie"). The Imperial Militia comprises all men fit to bear arms from their 21st to the end of their 43rd

* See also page 809 of the June JOURNAL.

RUSSIA—*continued.*

year, and is organized in two bans. The chief effect of the new law will be to increase the value of the 1st Ban, which may be used to reinforce the regular troops, or to form special militia units. The principal modifications introduced are as follows:—

(1) Hitherto the militia could be called up only "under extraordinary circumstances in time of war." Under the new law the Militia can be called up "only in time of war," and the calling up may be either general or local.

(2) The First Ban of the Militia will be composed of:—

(*a*) Men who have served in the regular forces, and who are fit for service.

(*b*) Men, classed according to age, who have been exempted from service in the regular army. The number of these classes which will be utilized may vary, and the youngest men will be taken first.

(*c*) Retired officers of the regular forces, and others destined for commissioned rank.

(*d*) Professional men such as Surgeons, etc.

(3) Men in class (*b*) will undergo training twice during their first 4 years of militia service. The period of each training will not exceed six weeks, and will not occur during the months June, July, or August.

(4) The War Office, Admiralty, or Home Office respectively, will be responsible for the supervision of the measures for the equipment and supply of the 1st Ban. The excutive work will be delegated to Governors of Provinces, and to General Officers in Command of Military Districts.

(5) The points of assembly, and schemes for the allotment of the men available, their transport, and the formation of militia units, will be prepared in time of peace.

(6) The State will bear the cost of the formation, maintenance, and equipment of militia units; but Rural Councils will be responsible for the provision of accommodation at points of assembly, for the cost of transport of the men to these points, and for the provision of horses, vehicles, and harness for these units.

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MILITARY SERVICE.—Russians resident in Turkistan are now liable to military service as in European Russia.

MUSKETRY.—The Tsar has authorised funds for the increase of the annual allowance of practice ammunition. For the infantry, this increase will apparently be 170 rounds of ball instead of 120 as heretofore.

The duties of the recently appointed Inspector of Musketry are to exercise general supervision by means of inspection over the conduct of musketry practice, and to ensure proper care of all small arms, machine guns, and ammunition. He is responsible for the Officers' School of Musketry; he is an advisory member of the Artillery Committee, and is *ex-officio* president of the small arms section of that Committee. The appointment carries with it the rank of an army corps commander; the inspector is allowed an inspection staff of 2 officers, 1 official, and 3 clerks.

TRAINING OF RESERVISTS.—The Reservists of the following arms: Infantry, Artillery, (Field, Dismounted and Fortress), and Engineers, who served with the colours in 1904-6, will be called up throughout the Empire this year to attend Camps of Instruction lasting four weeks. These camps will be formed in the autumn, at the conclusion of the summer manœuvres,

RUSSIA—*continued.*

except in the Priamur Military District, where the date for them will be fixed by the officers commanding the district.

ANNUAL CONTINGENT.—By imperial decree dated 7th May, 1911, the number of recruits to be called up for military and naval service during 1911 has been fixed at 455,000.

Railways.

The Imperial Council has approved of the proposal of the Minister of Ways of Communication to construct a railway in the Kuban District. This railway will open up the fertile area east of the Sea of Azov.

The Imperial Council has approved of the construction of a railway by private enterprise from Yekaterinberg to Irbil in the north-eastern Urals, length of line about 100 miles.

The Imperial Council has approved of the proposal to invite a party of foreign specialists in tunnel construction to examine the scheme for a tunnel 15 miles in length through the Caucasus in connection with the Vladekafkas-Tiflis railway project.

It is reported that Helsingfors-St. Petersburg section of the Finnish railways is now fit to carry Russian rolling stock.

Regular passenger and goods traffic has been opened on the "Rail-head Section" (the extreme western section) of the Amur Railway.

The Council of Ministers has decided on the necessity of the construction of a Southern Siberian line—Uralsk-Orenburg-Akinolinsk-Semipalatinsk (estimated cost 150 to 160 million roubles)—and of an Altai line—Semipalatinsk-Barnaul-Novonikolaevsk. Both of these lines are to be constructed from Government funds. The construction of a line from Arys *via* Pishpek to Vyerni by private capital is placed first in order of importance of Northern Turkistan railway projects.

SWITZERLAND.

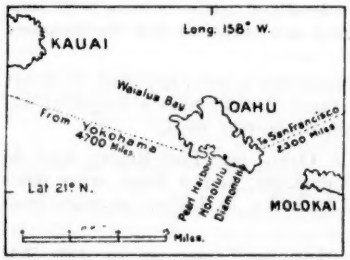
WAR MATÉRIEL FOR 1912.—The War Department have made the following demand for war matériel in 1912 :—

Description	Estimate for 1912.	Amount noted for 1911.
Clothing	£18,816	18,637
Armament and equipment	53,355	58,272
Officers' Equipment	19,590	31,711
War *matériel*	99,218	87,494
Fortress *matériel* :—		
St. Gothard	6,354	2,268
St. Maurice	428	972
Artillery trials	160	— —
Total	197,920	199,354

CONVERSION OF RIFLE.—In addition to the above normal estimates, a loan of £628,000 will be raised in order to pay for the conversion of the rifles, carbines and machine guns. A new bullet giving a flatter trajectory and greater penetration has been introduced and has necessitated the conversion of the present small arms. It is proposed to complete the re-armament of the "Elite" and "Landwehr" by 1916.

UNITED STATES.

THE DEFENCES OF HONOLULU.—The island of Oahu, in the Hawaiian Archipelago, is about 45 miles long by 30 miles wide, it has a coast line of 170 miles, of which about 40 miles is to be protected by fortifications. It would be possible, therefore, for a hostile force to disembark on the beach out of reach of the coast forts. Some 70 sea-going gasoline *sampans* would be available to assist in such an operation. A wide valley north of Pearl Harbour extending to the north coast of the island appears the most probable landing place for an enemy.*



Some batteries of large guns have already been mounted guarding the entrances to Pearl Harbour and Honolulu. When the present plans for coast defence have been completed the latter place may be considered safe from an attack from the sea. The same cannot, however, be said with regard to an attack from the land side.

A line of defence some 30 miles long might be drawn from a point east of Diamond Head to a point west of Pearl Harbour; this line would be nowhere less than 2 miles distant from Pearl Harbour, Honolulu, or Diamond Head. Its front would be partly protected by difficult mountainous country; but whether this line or any other is adopted, it appears that active defence must be arranged for on at least 8 miles of the land front. In this connection it should be remembered that at Port Arthur the land front was 13 miles long, and that some 50,000 men were available, at the outset, to defend it.

In the autumn of 1909 it was persistently reported that the garrison of Honolulu was to be made up to a strength of 20,000 men; this intention appears, however, to have been abandoned. The present garrison consists of 400 marines and 600 national guards. It is understood that the permanent force which it is proposed to station in the island is to consist, in addition to the above, of 2 regiments of infantry (1600); 1 regiment of cavalry (800); 8 companies of coast artillery (800); 1 company of engineers (150); 1 company signal corps (100); hospital troops (50); total 4,500.

The number of Japanese in the Hawaiian islands is estimated to be over 75,000, of whom some 16,000 reside in Oahu.

—*Précis from the (U.S.) Infantry Journal.*

ANOTHER ACCOUNT:—According to an article in the "Mid-Pacific Magazine," the ground on which the fortifications of Pearl Harbour are now being constructed, is low and swampy. It was necessary to bore for solid ground, and to pour concrete and cement into the cavities, and to lay down tons of steel rods in order to secure good platforms for the heavy guns. The Pearl Harbour fortifications when complete will occupy the great reservation known as Fort Kamehaha. There will be a battery

* Apparently the valley from Pearl Harbour to Waialua Bay is intended.—ED. R.U.S.I.

UNITED STATES—*continued.*

of 12-inch guns, named after the late Lieutenant Selfridge, and a battery of 12-inch mortars half a mile distant, further back from the shore. On the west shore of Pearl Harbour entrance another battery of heavy guns is eventually to be constructed.

There will be a chain of land forts, manned by the army, from Pearl Harbour to Diamond Head.

At the mouth of Honolulu Harbour there will be a battery of small guns; at Fort de Russy, Waikiki, a battery of 14-inch guns; while at Diamond Head a battery of 8 mortars has been manned for the past year. Within the extinct crater of the latter headland galleries have been constructed, in one of which an observatory has been installed for purposes of fire control.

The navy yard is in process of formation; a great dry dock at Pearl Harbour will be completed in July, 1912. It will have a length of 820 feet, a width of 110 feet, and a depth of 35 feet clear.

There are now 4 fortified places in Oahu, *viz*: Fort Ruger, Fort de Russy, Fort Armstrong, and Fort Kamehaha, and 2 large army posts including Fort Shafter, and Schofield barracks, at Leilua, 20 miles from Honolulu.

The article in the "Mid-Pacific Magazine" goes on to state that there are at present in the island 1 regiment of cavalry, 3 battalions of infantry, 1 battery of field artillery, 2 companies of coast artillery, and 1 company of engineers, besides 400 marines.

Précis from the (U.S.) Army and Navy Journal.

AERONAUTICAL NOTES.

GENERAL.

At the annual session of the "Institut de Droit International," which was held at Madrid in April last, the question of the employment of aeronauts in war was discussed. The resolution finally adopted was as follows:—

"Aerial warfare is permitted, but only on condition that it does not involve greater danger for the persons and property of peaceful inhabitants than is involved by war on land or on sea."

GREAT BRITAIN.

The following is a summary of the new regulations issued by the Army Council regarding the military employment of aircraft:—

THE AIR BATTALION AND RECONNAISSANCE.

The Army Council regard the new unit as one of the most valuable means of obtaining information at the disposal of the Commander of an army. The Air Battalion will not, however, replace other means of acquiring information, such as the action of the Cavalry, of the three arms, of agents, etc., but will be used in conjunction with such services, being employed in the work that can be undertaken by it to the greatest advantage, and used either to gain news of the enemy and of his dispositions or to confirm the accuracy or falseness of the information obtained from other sources. The more important the service the larger should be the number of vessels employed on it, and the primary function of those

GREAT BRITAIN—*continued.*

vessels of the Air Battalion detailed for reconnaissance duty will be to gain and transmit to the Commander reliable information.

Field units of the Air Battalion will, as a rule, work under the direct orders of general headquarters as Army troops, but vessels may be detached to the army or other headquarters as required, the principle being observed that the Air Battalion shall be so distributed that the units may not only be placed in the best positions to obtain information, but to co-operate with the other arms, and especially with the Cavalry, in this all-important service.

The manner in which reconnaissance is to be carried out is to be left generally to the discretion of those who will actually undertake the duty. It is considered that there is less risk from positions behind rather than in front or the flank of the enemy when seeking information. The reason assigned is that the enemy's dispositions will probably have been made with a view to concealment from observation from the front and flanks rather than from the rear, whilst for fear of damaging his own troops he may hesitate to fire on vessels sailing over the rear of his columns. Vessels, also, when so placed may escape fire through being mistaken for friendly aircraft.

The presence of troops, if in the open, can be observed in clear weather at an altitude of from 5,000ft. to 6,000ft. within a radius of four to six miles from the aeroplane or dirigible; when nearer the earth objects will be rather more easily distinguished, but are a shorter time in view, and the area is restricted.

Dirigibles and Artillery Fire.

Dirigibles will be exposed to considerable danger from artillery fire when lower than 4,500ft. or within a range of 5,000 yards, and from rifle or machine-gun fire when at a height of less than 3,500ft. or at ranges under 2,000 yards. Against aeroplanes it is thought that the fire of field artillery will rarely be effective at 4,500ft. or at a range of 4,000 yards and upwards, whilst reasonable security from the fire of small-arms may be expected when 3,000ft. from the earth or at ranges of 2,000 yards and over. High speed, movement in curves, and frequent changes of direction and elevation are suggested as means to reduce the probability of being shot. Concealment in the clouds, if possible, when approaching the enemy is also another useful hint.

Transmission of Intelligence.

For transmission of intelligence from dirigibles, wireless telegraphy, signalling, or carrier-pigeons can be used. There are difficulties in conveying messages from aeroplanes by signal which can be overcome by the use of a motor car proceeding to some suitable locality where a packet can be dropped as the machine passes overhead, and this can then be conveyed to the Commander. Captive balloons and kites should not be used for any length of time within 5,000 yards of the enemy's artillery, and good cover is necessary for the balloon's descent. In normal conditions of ground and weather a radius of four to six miles can be held under observation from a captive balloon or kite, whilst the effect of artillery fire can be observed at a distance of 7,000 yards, or even further in the case of heavy artillery.

Firing at Airships.

In deciding whether it is advisable to open fire at airships the probability of escaping observation if fire is reserved is to be considered.

GREAT BRITAIN—*continued.*

Special observation parties of men skilled in distinguishing between friendly and hostile craft might be detailed to watch for the enemy's machines and give warning to the artillery and machine-gun Commanders, who will be prepared to fire much in the same manner as against moving targets on land. *Précis from the "Times."*

GIFT OF AEROPLANES.—It is officially announced that the well-known aviation expert, Mr. H. Barber, has generously offered to present to His Majesty's Government four Valkyrie military aeroplanes, with a view to encouraging aviation in the Naval and Military Services.

His Majesty's Government have gladly accepted Mr. Barber's public-spirited gift, and, in accordance with the donor's suggestion, two machines will be allotted to the Royal Navy and two to the Army.

Mr. Barber's offer was accompanied by no conditions, and His Majesty's Government highly appreciate his generous and patriotic act.

BELGIUM.

DIRIGIBLES.—At the end of the year the army possessed one dirigible, *La Belgique*, (the gift of the inventor, M. Goldschmidt), and had another at its disposal in time of need. The latter (the *Ville de Bruxelles*) is the property of a syndicate of rich men, and is maintained by them. It can carry 16 persons all told.

On June 12th this dirigible broke loose, while being towed to its shed, and descended at Wavre.

The Balloon Company of the Engineers, to which had been entrusted all aviation matters in the army, was also at work on a third dirigible.

There were dirigible sheds at Brussels (2), and Antwerp, and others were to be provided at Liège and Namur. *La Belgique* was destined for one of the last named fortresses.

AEROPLANES.—At the end of the year 1910 there were two schools of aviation in Belgium, that of Baron de Caters at St. Job, near Antwerp, and that of Chevalier de Laminne, at Kiewit, near Hasselt.

Some 15 meetings had taken place in the country during the year, but none had assumed a military character, though there are generally officers on the committees. Two officers had received pilot certificates.

One Farman biplane of military type had been purchased for the army, and was in charge of de Laminne, at Kiewit.

Pilot certificates are issued by and at the discretion of the Aero Club of Belgium. The examination, besides theory, includes two distance flights of at least 2 kilometres each on a figure of 8 course, height test of 50 metres above starting point, and alighting tests.

The Brussels correspondent of the *Times* reports (June, 1911) that, in accordance with the recommendations of a committee of experts a provisional scheme has been decided upon, fixing the number of aeroplanes in time of peace at six. Of these, four will be attached to the field forces, and two to the fortresses of Antwerp, Liége, and Namur. In war time another four machines are to be requisitioned for the General Staff, and twelve for the use of the three fortresses.

The officers who will act as pilots and as observers, and who must be unmarried, will undergo a three-months' training at the newly-established school of aviation at Antwerp.

GERMANY.

LONG DISTANCE COMPETITION.—The start in the great aerial race over a circuitous course of 1,200 miles through Germany organized by the *Berliner Zeitung* took place from Johannisthal on June 11th. There were eleven starters out of 24 entries. None but German airmen were admitted to this contest.

The competition is intended to stimulate aerial navigation with flying machines for military purposes.

Prizes aggregating £21,000 have been offered by a variety of institutions and individuals.

The course is divided into 13 sections—at present (end of June) Magdeburg, Schwerin, Hamburg, Kiel, Luneberg, Hanover, Munster, and Cologne have been reached. At each of these places special flying competitions have taken place.

BERLIN FLYING WEEK.—Previous to the commencement of the long distance race mentioned above, a flying week took place at the beginning of June at Berlin.

A height "record" with a passenger was established on June 6th by Herr Hirth, who on his Ettrich-Rumpler machine reached a height of 1,580 metres; but this was beaten a few days afterwards by Herr Schendel who on a Dormer monoplane with a passenger reached the height of 1,700 metres. The machine however fell, and both were killed.

ITALY.

A new small type dirigible "P.3." made its trial trip on May 11th. It carried a crew of 5 and flew a total distance of about 40 miles in 1 hour 20 minutes. The dirigible was constructed at the Boscomantico sheds near Verona. It is 63 metres long and is divided into 8 compartments having a total capacity of 4,000 cubic metres. Each compartment can be filled independently of the others. An arrangement of pulleys at the bow is said to enable the dirigible to revolve on itself when landing according to the direction of the wind.

Silk envelopes for dirigibles have been abandoned in favour of those made of impregnated canvas. The latter are heavier, but require less time to complete; two months as compared with six for the silk envelopes.

JAPAN.

The Minister of War has presented to the Japanese Diet a credit of £118,750 to cover the initial expenses already incurred for aeroplanes. Two officers sent to Europe have purchased four aeroplanes of the Bleriot, Farman, Wright and Curtis models. An increased appropriation is asked for for this year.

RUMANIA.

Two aeroplanes, the "Aeroplane Coanda" and the "Aeroplane Paulat," have been invented by Rumanian officers. The lower part of the frame of the latter is shaped like a boat, in order that the machine can alight on, and rise from, the water.

RUSSIA.

In answer to a question in the House of Commons (March 2nd) it was stated that the Russian Army had 9 dirigibles complete, 1 building, and 4 on order; 10 aeroplanes available for use and 4 on order. The expenditure on aeronautics for 1910 was £183,820 (estimate). The *Times* (28th February) reported that the Duma had approved the expenditure of £1,000,000 on the development of military aviation.

RUSSIA—*continued*.

Early in 1911 a school of aviation was opened at Warsaw, and it was proposed to establish a school at Moscow. Three officers qualified as pilots at Sevastopol, during April, and 7 others were then under instruction.

During the aeronautical exhibition held in St. Petersburg early in May, a conference of the various Russian Aero Clubs were held and the Grand Duke Alexander Mikailovitch stated that the objects for which the clubs should work were :—

(1) to train aviators;
(2) to study air routes; and
(3) to investigate air currents.

In May the Budget Committee of the Duma recommended a grant of 100,000 roubles (£10,526) towards the Moscow-St. Petersburg flight, and the Duma was asked to authorise a grant of £526 to the Moscow Aeronautical Society, which had just received a Farman aeroplane.

It was decided that 10 officers of the General Staff should be attached annually to aeronautical units to undergo practical courses in aviation.

In June the War Council agreed to the request of the Engineer Department for an increase in the Aviation Section of the Officers Aeronautical School, in order to augment the number of aviator-pilots in the army.

A new branch of this school was opened at Gatchina, where about 10 aeroplanes are available for instructional use.

A special Aeronautical Committee was formed to deal with all matters concerning military aviation.

A dirigible furnished by the " Dux " company last year has effected 16 flights, and is considered a great success. A further order has now been placed with the " Dux " Company. It is stated that the new dirigible will have a capacity of about 88,000 cubic feet; the estimated speed is 40 miles per hour. A crew of 6 men will be carried. Wireless Telegraphy will be fitted, and it is expected that the dirigible will be able to rise or descend without loss of ballast or gas.

A dirigible built by the Electro-Mechanical Co. (Duflon & Co.), of St. Petersburg is ready for trial. The capacity of the envelope is about 102,000 cubic feet. Two Erlicon motors, each of 50 h.p., are fitted.

Instructions have been issued in the St. Petersburg Military District to the effect that immediate aid is to be rendered by the nearest body of troops to any military dirigible or aeroplane which may descend in the district.

The Committee for strengthening the Fleet has purchased 8 Bristol aeroplanes of British manufacture, and 2 Breguet aeroplanes.

An aviation meeting was held at St. Petersburg in June, and the Russian Government contributed £2,600 out of the prize list of £4,200.

The Commander of the Caucasus Military District has authorised the formation of the Caucasus Military Aero Club at Tiflis. In war the apparatus and trained personnel would be at the disposal of the military authorities.

NAVAL AND MILITARY CALENDAR.

2nd	(Fri.)	H.M.S. *Hyacinth* paid off at Chatham.
3rd	(Sat.)	Birthday of His Majesty the King (1865).
5th	(Mon.)	H.M. Ships *Achilles* and *Warrior* paid off at Portsmouth and Devonport respectively, and recommissioned the following day.
"	"	H.M.S. *Exmouth* paid off at Portsmouth, and recommissioned the following day.
"	"	H.M.S. *Boadicea* paid off at Chatham, and recommissioned the following day.
6th	(Tues.)	H.M.S. *Commonwealth* commissioned at Devonport.
10th	(Sat.)	H.M.S. *Exmouth* left Portsmouth for the Mediterranean.
"	"	Launch of the first-class battleship *Friedrich der Grosse* from the Vulcan Yard, Hamburg, for the German Navy.
22nd	(Thurs.)	King George and Queen Mary crowned in Westminster Abbey.
23rd	(Fri.)	Their Majesties drive in State through London.
24th	(Sat.)	Launch of the first-class battleship *Viribus Unitis* from the yard of the Stabilimento Technico, Trieste, for the Austro-Hungarian Navy.
29th	(Thurs.)	Launch of the first-class battleship *Sevastopol*, the first of the Russian *Dreadnoughts*, from the Baltic Works at St. Petersburg for the Russian Navy.

NOTICES OF BOOKS.

The Army Annual and Year Book. 1911, edited by Lieutenant-Colonel H. M. E. BRUNKER. London, 1911. William Clowes & Sons.

In a period of rapid development and transition, such as that through which the defence forces of the Empire have been passing during the last ten years, there is ample scope for a book of reference which shall collect, classify, and place before its readers in a convenient form the information scattered through army orders, Budgets, statistical reports, and articles in various military periodicals. To produce a book of this sort, which should be a really complete "progress report" for the British Empire for the whole year, is, perhaps, an unattainable ideal, but the Army Annual certainly does much to supply the deficiency, and there are few events of importance during 1910 regarding which information will not be found in its pages. In addition to the usual summary of the Army Estimates, there are some well-chosen reprints of articles on Army Finance, Requisitions in War, Mechanical Transport, etc. The information regarding the forces of the self-governing Dominions will be read with especial interest.

Among numerous other articles of importance mention must also be made of the comparison between the British, French, and German systems of field artillery, and the summaries of the narratives of the interdivisional and army manœuvres.

FOREIGN PERIODICALS.

NAVAL.

Argentine Republic.

BOLETÍN DEL CENTRO NAVAL. Buenos Aires: **May, 1911,**—A contribution to the study of spherical triangles. Firing with Morris tubes. Comparison between engines with pistons, and turbines.

Austria-Hungary.

MITTHEILUNGEN AUS DEM GEBEITE DES SEEWESENS. Pola: No. 7. 1911.—Progress in ships' engines. Experimental aeronautical stations and their importance in the development of aviation. The British Naval Budget, 1911-12. Measures to be taken in the engine room when clearing for action. The Japanese Naval Budget.

Chili.

REVISTA DE MARINA. Valparaiso: **31st March, 1911.** The behaviour of the Compasses on board the *Blanco Encalada*. Submarine Mines. Results obtained by the French navy in submarine navigation. Wireless Telegraph Stations on the coast of Chili.—**30th April, 1911.**—The Chilian Naval General Staff. Some notes on the hydrographical work carried out at Llanquihue and Cheloe.

France.

REVUE MARITIME. Paris: **May, 1911.**—An admiral Archbishop, Henri de Sourdis (1594 to 1645). The fire of battleships of 23,000 tons. Events of naval history. Official history of the Russo-Japanese naval war (4th part).

LE MONITEUR DE LA FLOTTE. Paris: **3rd June, 1911.**—A comparison of the great navies (with a table of naval construction for the 8 principal naval powers). The French warships in Maroccan waters.—**10th June,**—The programme of reforms (text of M. Delcassé's report). The French warships in Maroccan waters.

LE YACHT. Paris: **3rd June, 1911.**—The fort of Gibraltar (a description of the fort with 2 sketch maps). The strength of naval turbines (a treatise on the most common causes of damage to turbines.)—**10th June, 1911.**—The new law regarding conscription for the navy (urges that the Bill should be passed as soon as possible).—**17th June,**—The reforms projected by M. Delcassé (comments very favourably on the proposed changes).—**24th June,**—The organization of submarine stations in France and abroad (a survey of the position in France, England, Germany, Italy, and Austria).—The composition and distribution of the German naval forces in 1912.

LA VIE MARITIME. Paris: **10th June, 1911.**—The French naval programme (criticises the naval authorities for their changes of policy).—The rapidity of fire of ships' guns. Fuzes acting by inertia (proposals for a new kind of delay action fuze).—**25th June, 1911.**—Naval reforms (notes on the new distribution of the French fleet).—Fuzes acting by inertia (concluded).

Germany.

MARINE RUNDSCHAU. Berlin: **July, 1911.**—Accidents to submarines with special reference to the sinking of the "U. 3" (a lecture with 5 sketches).—The experimental practice against the target vessel *San Marcos*, and artillery practice in general in the United States.—The principles of Tactics, by Pfarrius.—The hospital ship (with plans).—Coal supply of war vessels at sea. (A study of the question from the point of view of International Law).

Spain.

REVISTA GENERAL DE MARINA. Madrid: **May, 1911.** The equipment of the Spanish naval ports.—Report on the progress of naval construction on 31st December, 1910, in accordance with the law of the 7th of January, 1908.—Notes on explosives.—Firing from ships (a technical article).—The construction, organization, and management of modern warships.—Some famous sailors (de Villavicencio and del Venadito).

MILITARY.

Austria Hungary.

DANZER'S ARMEE-ZEITUNG. Vienna: **1st June, 1911.**—The new Army Bill. (The article shows how the new law as to conditions of service will increase the peace establishment of units, but will fail to solve the problem of N.C.O.'s.) The third year of the two years' service system. The Vienna horse show. **8th June,**—Diary of a diplomatist (Colonel von Ruff, 1859). The General (the question of supreme command in political and military matters). The weakness in the composition of the Austrian fortress artillery. **15th June.**—The political importance of the new military law. The new army of M. Jaurés, the French Socialist. Italy as our friend. (The writer questions the value of the alliance in case of war.) The decisive importance of a victory at sea for the success of land operations against Italy (an interesting strategical article). **29th June,**—A central uniform factory for the whole army. The question of N.C.O.'s. The importance of the Alpine passes in the Southern Tirol for ski troops. The Russian reserve cavalry regiments.

KAVALLERISTISCHE MONATSHEFTE. Vienna: **May, 1911.**—The Hussar Regiment, No. 11 (King Ferdinand of Bulgaria). The advance of large masses of cavalry. Cavalry in the decisive phase of the battle. The attack mounted, and the fire action of cavalry. The cavalry bayonet. Prince Frederick Charles of Prussia. The Russian reserve cavalry regiments. Remarks on the leading and training of a horse artillery battery. The army veterinary service in Austria-Hungary. **June, 1911.**—Count Szechenyi and his method of training in equitation. Cavalry "Pot pourri" (discussion of formations for manœuvre in different countries). How to get the full value out of cavalry (a reply to an article in the April number). The self-fitting (*Miederbock*) saddle (urges that this form of saddle should be given a wider trial). Cavalry officers and maps, by Captain Stavenhagen (discusses the relative value to cavalry officers of different kinds of maps, with notes on the maps most in use in various countries). Machine guns with army cavalry. (Notes from the German regulations, illustrated from the Imperial Manœuvres of 1909.) The cavalry combat from an artillery point of view.

France

JOURNAL DES SCIENCES MILITAIRES. Paris: **1st June, 1911.**—The freedom of action of the higher commanders (continued). (Describes the unfortunate results in 1859 and 1870, of Napoleon IIIrd's position as supreme commander.) The action at Lamarche-en-Woevre. A detachment of the Train during the campaign in the Shawia, 1908 (gives interesting information regarding the transport services in Moroccan warfare). Service in the field (hints for practical instruction).

LE SPECTATEUR MILITAIRE. Paris: **15th June, 1911.**—Current topics (the new German Army Bill). A year's tactical instruction in a demi-regiment of cavalry: 2nd series. Application. Reflections, by a captain, on the methods of fire and manœuvre of field artillery (deals chiefly with the practicability of methods of ranging and firing from behind cover). Two lectures on the Japanese Army, delivered at the "Ecole superieure de la guerre," in 1910; second lecture (this lecture deals with: views of Japanese officers as to losses; the comparative effects of fire-arms; moral; phases of the attack; manœuvre; communications on the field of battle). The Battle of Coulmiers (continued). (Describes the condition of the French troops about the time of the capitulation of Metz.)

REVUE DE CAVALERIE. Paris: **June, 1911.**—Opinions. The importance of manœuvre (urges that the advantages to be gained by skill in manœuvre should not be neglected merely for the sake of simplifying cavalry tactics). Review of Lieut.-Colonel Montaigne's book *Etudes sur la guerre*. Note on General Duparge, I.G. of the Remount Service (with a portrait). The cavalry of to-morrow (to be continued). (Protests against the undue emphasis laid, in the French Regulations, on the duties of reconnaissance and protection, and the comparative silence of the Regulations regarding the employment of cavalry on the battlefield; it is indicated, in an editorial note, that the authorities are not in agreement with the writer's views, though the article is published in the interests of free discussion.) The uniforms of the German Army (a description of the new field grey uniform, with coloured plates). In Marocco (a clear resumé of the French operations up to the Relief of Fez, with 2 large scale maps, one of the western, and one of the eastern theatre of operations). Opinions: dismounted action of cavalry and automatic fire-arms (advocates carrying automatic rifles, e.g., Rexer or Madsen types, with each squadron, instead of arming all the men with carbines). A splendid march—90 miles in 24 hours. (Describes a reconnaissance carried out by 1 officer and 4 other ranks of the 1st Cuirassiers.)

REVUE D'HISTOIRE. Paris: **June, 1911.**—Marching in the days of Napoleon (continued). (Formation of march columns; staff work in connection with marches.) The manœuvre of Pultusk (continued) (1806). The campaign of 1813 (continued). (Second part: the command of Prince Eugéne.) The campaign of 1844 in Marocco (the Battle of Isly). The war of 1870-1871 (continued). (Chapter IV. The operations round Orleans from the 21st September to 1st October.) Moltke's military works. (The recent German General Staff publication on the "preparation for the battle.")

REVUE MILITAIRE DES ARMÉES ETRANGERES. Paris: **June, 1911.**—The Austro-Hungarian Army on the eve of the introduction of the two years' service system. (The article explains the causes which have compelled the Dual Monarchy to revise her military system, describes the changes which have taken place since 1889, and gives a summary of the new measures proposed.) The Imperial Manœuvres in Japan in 1910.

REVUE D'INFANTERIE. Paris: **15th June, 1911.**—Translation of the new Regulations for gymnastics in the Russian Army. The right wing of the Russian Army at Rezonville. Translation of the new regulations for field fortification for officers of all arms in the Russian Army. Napoleon Ist's field kitchen in the campaign of 1812.

REVUE MILITAIRE GENERALE. Paris: **May, 1911.** —Studies of the Russo-Japanese War, with 2 sketches, by Captain de Saligny. (Commences with an introduction and a useful list of works consulted; the first study is a review of the political situation, the characteristics, and intention of the opponents.) Our bases in Marocco. (Describes (*a*) bases on the Algerian frontier, (*b*) in the Shawia, and discusses their relative importance to France.) Tactics: letters to a young officer; 5th letter: by General Bernard. (Discusses the action of the advanced guard during the attack.) The engineers during the autumn manœuvres of the 20th Army Corps (to be continued). (The work described included preparing bridges for destruction; constructing a raft; organizing the defence of a rallying position). The Doctrine of National Defence (discusses the case of a war between the Triple Alliance and the Triple Entente, especially with regard to the part to be played by England). **June, 1911.**—Manœuvre: a theoretical treatise. (Explains how the genius of manœuvre lies in the use of subsidiary objectives for the attainment of the main objective, which is always the destruction of the enemy's forces.) Essays on the Russo-Japanese War, II. From Yalu to Liao-yang (to be continued). (A critical study of the operations of both sides up to 31st July, 1905.) The engineers, during the autumn manœuvres of the 20th Army Corps. (Describes the work allotted to the engineers on various days, with suggestions as to how they could have been better employed. General Langlois adds a note emphasizing the necessity for *speed* in the work performed by engineers.) Tactics: more letters to a young officer. (Discusses the action of the main body in the attack.) The Doctrine of National Defence (continued). (Discusses the naval aspect of the question, and the possibility of German landings on the coasts of France.)

L'AFRIQUE FRANCAISE. Paris: **June, 1911.**—The latest developments of the Moroccan question (a statement of the aims of French policy). Captain Cauvin's reconnaissance in the Jurab (with a sketch map). Marocco (narrative of events in May and first week of June, and remarks on the action of Spain). The shores of the Ivory Coast.

Germany

MILITÄR WOCHENBLATT. Berlin: **1st June, 1911.**—General v. Sauer (obituary). The attack and defence of localities (with illustrations from the Russo-Japanese War). Notes from the French Army (the training of the reservists in 1910). **3rd June, 1911.**—Character training. Technical proposals for facilitating the erection of artillery observation ladders behind cover. The question of universal service in England. **8th June.**—The method of carrying carbines in the cavalry (to be continued). (Describes past methods up to 1884.) War games for *Landwehr* officers (to be continued). (Suggestions for officers arranging these war games). Notes from the Italian Army. (Contains notes on the Italian training manuals.) **10th June.**—The Russian General Staff History of the War in Manchuria (continued). (Shaho-Sandepu.) The method of carrying carbines in the cavalry (concluded). (Continues the history of past methods from 1884 up to date.) War games for *Landwehr* officers (continued). Service in

the cavalry (first article: duties of ensigns). **13th June.**—The French operations in Marocco (first article: introductory). War games for *Landwehr* officers (concluded). Notes from the Russian Army. (A protest in the *Russki Invalid* against Russian publications disclosing military information.) **15th June.**—The Boer War and its tactical lessons from German and British points of view. (Operations in Natal, February, 1900). The French operations in Marocco (continued). (Description of the western theatre of operations, with map.) **17th June.**—To what extent can cavalry still co-operate in decisive action on the battlefield (to be continued). The Boer War and its tactical lessons, from German and British points of view. (Night operations in Natal, February, 1900.) The Turkish Army. (Précis of an article by General Imhoff.) **20th June.**—How far can cavalry co-operate in decisive action on the battlefield (to be continued). The French operations in Marocco (3rd article: operations to the end of April). **22nd June.**—The investment of a fortress (with examples from Danzig, Sevastopol, and Paris). To what extent can cavalry still co-operate in decisive action on the battlefield (concluded). The French operations in Marocco (4th article: up to the relief of Fez). Drill in the Japanese Army. **24th June.**—The Army and the gymnastic Associations. The carrying out of the strategic plan, by von Schlichting (to be continued). (Illustrated from the advance of the Prussian armies in 1866.) The investment of a fortress (concluded). Service in the cavalry (continued). (The 2nd lieutenant's duties.) **27th June.**—The importance of familiarity with foreign military systems, by Balck. (Mentions best books to study). The carrying out of the strategic plan, by von Schlichting (concluded). Notes from the British Army (the horse question, aviation, etc.). **29th June.**—Are section columns or extended lines the best formation for infantry advancing through lines of guns in action? (The author recommends the latter, disagreeing with the writer of a former article). Military technical notes; aviation.

INTERNATIONALE REVUE ÜBER DIE GESAMTEN ARMEEN UND FLOTTEN Cologne: **June, 1911.**—Belgium: aeronautics (a note on the new flying school at Antwerp). Germany: recruiting (arrangements for the discharge of reservists in September, and allotment of recruits of the 1911 contingent to units). The new instructions for field artillery fire (a review of the new manual, pointing out the principal changes). New formations, etc. (a summary of the new units, appointments, etc., created, from the 1st of April, 1911, by the new Army Bill). France: progress in aeronautics in France (a summary of the situation as regards dirigibles and aeroplanes in the spring of 1911). Results of an experimental mobilization in 1910. (Describes an experiment in raising a battery to war strength, the reservists being called up, and horses requisitioned as for war.) The new uniforms of the French Army. (Describes the new invisible uniform, and the rank badges of officers and N.C.O.'s.) Great Britain: criticisms on the autumn manœuvres of 1910 by the Chief of the General Staff. (A summary of the Memorandum on Army Training.) Italy: the estimates for 1910-12. (Points how far the Budget establishments fall short of the legal peace establishments.) Austria-Hungary: the Danube flotilla (a description of the new Monitors). Russia: the reforms in the compulsory service law. (An epitome of the measures proposed by General Sukomlinov in order to introduce a uniform period of 3 years' service, and to minimise exemptions.) The new educational curriculum in Russian military schools. (Précis of an article in the *Ruskii Invalid*.) United

States: the strategical importance of the Panama Canal. (A survey of the strategical situation in the Pacific, and an account of the fortifications to be built for the defence of the Panama Canal.)

THE FRENCH SUPPLEMENT OF THE INTERNATIONALE REVUE (Supplément 147, of June, 1911) of the June number consists of a translation—40 pages—in French of the chapter on artillery *matériel* in Von Löbell's Annual for 1910.

THE GERMAN SUPPLEMENT 130, of June, 1911, consists of an account —in 27 pages—of the defence system of Holland.

Italy

RIVISTA MILITARE ITALIANA. Rome: **May, 1911.**—From Renda to Palermo: 19th to 27th May, 1860 (concluded). (A study of General Garibaldi's movements.) Hugo Foscolo (a writer on military subjects.) Organization and tactical employment of machine guns in the field (concluded). Comparison of losses in attack and defence. The secret of victory as revealed by military criticism. Alcoholism in the Army (concluded). The military preparedness of Prussia in 1859 and the Peace of Villafranca. The "Carabinieri Reali" at Pastrengo (30th April, 1848). More about practice ranges for field artillery (criticism of articles on this subject by General Lang and Captain Guillet.) The fighting forces of European States (Greece and Crete). The jubilee of the 54th Infantry Regiment.

Switzerland.

REVUE MILITAIRE SUISSE. Lausanne: **June, 1911.**—The employment of the engineers during the floods in 1910 (with 22 photographs showing the nature of the work). A final letter on the Ehrhardt "high explosive shrapnel," and the Krupp "common-shrapnel."

United States.

JOURNAL OF THE U.S. INFANTRY ASSOCIATION. Washington: **May—June, 1911.**—Some needs of the Army. (Urges improvements in system of promotion and organization of higher units.) The truth concerning the United States Army. (An important article setting forth the inadequacy of the U.S. Defence Forces; was read in Congress.) Infantry and field artillery (their co-operation in garrison training). The use of automobiles and motor cycles in the field of operations. Military Service and State Law. Editorial Department. (Contains notes on the mobilization in Texas, and pending military legislation.)

JOURNAL OF THE MILITARY SERVICE INSTITUTION, **July—August, 1911.**—The Reeve Memorial Prize Essay. "Is the present system of detail to staff departments conducive to the discipline and efficiency of the Army? Should it be revised?" By Major George H. Shelton, U.S. Army. (The first and second honourably mentioned essays are also given.) The Army as a pioneer of civilization, and as a pioneer of civilization under our Government. Some proposed changes in military clerical work (suggests measures for making the clerical system less cumbersome). Military spirit Review of the "History of Reconstruction in Louisiana" (a book by J. R. Ficklew, 1861-1868). A short history of the military occupation and government of Porto Rico by the United States. (Interesting from the point of view of the relations between an army of occupation and the civil power.) A review of the services of the regular army during the civil war (to be continued). (The first part deals with the regular infantry.) Manœuvre. Divisional notes. (Experiences of the troops during the recent mobilization in Texas.)

STREFFLEUR'S MILITARISCHE ZEITSCHRIFT. Vienna: **June, 1911.**—Not yet received.

RECENT PUBLICATIONS OF MILITARY INTEREST.

COMPILED BY THE GENERAL STAFF, WAR OFFICE.

APRIL, 1911. PUBLISHED QUARTERLY.

PART II*. SECTION I. HISTORICAL—(*continued*).

Communicated by the General Staff and reprinted by permission of the Controller of His Majesty's Stationery Office.

Dupleix. By Colonel John Biddulph. 178 pp., with an appendix. 8vo. London, 1910. White. 5/-.

A concise account of the life of an interesting and striking figure. The author has written without bias, and has presented a faithful and unexaggerated history of the career of the man who first brought India within the scope of European politics.

George the First's Army, 1714-1727. Vol. I. By C. Dalton, F.R.G.S. 407 pp. 4to. London, 1910. Eyre & Spottiswoode. 21/-.

This book is carefully compiled from historical records. A large number of names of officers and their services are mentioned. The present volume covers the period from the accession of George I., to the declaration of the war with Spain, 1714-1718. It opens with an essay on the "early Georgian era"; then follow chapters describing the careers of the following amongst other soldiers: Duke of Argyll, Colonel Charles Douglas, Lord Orkney, and Lieutenant-General Richard Sutton. The remainder of the book is devoted to records of the various regiments of the time.

MEDICAL.

My Experience in the Russo-Japanese War. (Meine Erlebnisse im russisch-japanischen Krieg). By W. Weressàjew. Translated into German from the original text by L. Meerowitsch and Dr. J. Bürli. 392 pp. 8vo. Stuttgart, 1908. Lutz. 6/-.

The author was a reserve medical officer called out for active service, and appointed to a field hospital in the army of Manchuria. He kept a diary from the time of mobilization until his return to Russia; this book has been compiled from his daily notes.

The book naturally deals mainly with the medical services, but a good deal of light is thrown on the working of other branches of the army. The medical services in the Russian Army were administered by combatant generals having no previous training in the employment of medical units. The result was, as might have been expected, hopeless confusion and waste of energy. Field hospitals were moved from place to place for no apparent reason, and at each move the wounded were ruthlessly evacuated without the slightest consideration for their condition. Many lives were wantonly sacrificed and much unnecessary suffering inflicted in consequence of these arbitrary orders. If the writer is to be believed, the main

* The titles of all books are given in English: this does not indicate that the books have been translated. The original title in the language in which a work is written, if not in English is given in brackets.

objects of senior administrative officers were to enrich themselves by falsifying the accounts, and to obtain a decoration for services which they had never rendered. His description of the retreat after the battle of Mukden reads like a nightmare. The one idea which pervaded all ranks was to get away from the Japanese. Wounded were left lying by the road side, drivers cut the traces and galloped off on the horses, leaving their wagons standing. Many of the soldiers helped themselves to the spirits in the army stores, became hopelessly drunk and were lost sight of. At each of the narrow bridges the retreating column became a congested mass of vehicles, each trying to force its way through without regard to the others. The effect of this retreat was disastrous for the Russian Army; by the end of the war, discipline had almost ceased to exist, and officers were openly threatened by their men.

The author, throughout his most interesting book, displays constant hostility to the Russian Army authorities, and it is more than probable that his description of the various incidents has been influenced by his personal bias.

STRATEGICAL AND TACTICAL.

Letters on Amphibious Wars. By Brigadier-General G. G. Aston, C.B. 372 pp., with 8 sketch maps and plans. 8vo. London, 1911. Murray. 10/6.

Brigadier-General Aston, as "soldier and sailor too," and as having a varied staff experience in the two services, is especially well qualified to write on the subject which forms the title of this book. In the preface to his "letters" he claims to have made an attempt "to illustrate from recent examples the direction of naval and military force against a common objective"; and a perusal of the work will convince the reader that he fully makes good this claim.

He has succeeded in presenting the examples he quotes in a manner not only full of instruction to the naval and military student, but calculated to place before the ordinary lay reader a concise and interesting summary of the campaigns selected, with special relation to the influence of sea power on the conduct of land operations.

The wars selected to point the moral of the supreme importance of intimate co-operation between the land and sea services are: (1) The war in Chile in 1891; (2) the Spanish-American War of 1898; (3) the Chino-Japanese War of 1894-5; (4) the Russo-Japanese War of 1904-5.

It is shown how "in three out of four cases, where fleets have been destroyed, in the last twenty years, an army has assisted in the operation," and that in the fourth instance—the destruction of the Russian Baltic fleet—"Admiral Togo's task was much simplified because Port Arthur had been taken by the Japanese Army, and Rojestvensky was therefore obliged to pass through straits where he could be easily located and cut off."

In the interesting and instructive outline of the last quoted campaign it is shown how the initial land operations were only rendered possible by the means taken by the Japanese to secure and retain command of the sea, whereby they were able not only

to transport their troops to the selected points and keep them supplied when there, but were also able to keep the Russian commanders continually in ignorance as to the precise direction from which to expect attack, and thus compelled them to dissipate their available forces over an extended front.

The book throughout is full of instruction, and well worth study by naval and military officers, while the ordinary reader will have placed before him in an interesting manner some of the problems which are likely to confront an island empire such as our own in the conduct of naval and military operations.

Moltke's War Lessons. Vol I. (Moltkes Kriegslehren. Erster Teil.) By the General Staff. 328 pp., with 5 maps and 28 sketches. Berlin, 1911. 7/-.

These War Lessons have been compiled by the German General Staff from Moltke's memoirs and military works. They are to be published in three volumes under the following headings:—

Vol. I.—The Strategical Preparation for Battle.

Vol. II.—The Tactical Preparation for Battle.

Vol. III.—The Battle.

The first volume has now been issued, and is sub-divided into chapters which deal with "Peace and War," "War and Politics," "Composition of Headquarters," "Selection of Senior Commanders," "Plan of Operations," "Base of Operations," "Flank Positions," "Fortresses," "Railways," "Telegraphs," "Food Supplies," "Supply of Ammunition," "Medical Services," and the "Field Post Office."

Much of the matter contained in this volume has of necessity already appeared in other military works.

A Guide to the Study of Tactics. (Leitfaden für den Unterricht in der Taktik). Official. 192 pp., with diagrams and sketches. 4to. Berlin, 1910. Mittler. 5/-.

This volume is the 16th edition of a text-book on tactics for use in military schools; it is issued under the authority of the Inspector-General of Military Education. A notice of the 15th edition appeared on page 88 of R.P.M.I. for April, 1909.

The book is based on the latest Training Manuals. It is divided into two parts. Part I. is of an elementary nature, and deals with the tactics of the several arms. Part II. deals with the employment of the three arms in combination. The appendix contains some short notes on French and Russian tactical methods.

TRAINING AND EDUCATION.

Operation Orders. A technical Study by Hans von Kiesling. Translated by the General Staff, War Office. 199 pp., with 2 maps. 8vo. London, 1910. His Majesty's Stationery Office. 1/6.

This is a translation of an instructive series of studies in applied tactics which has already been reviewed at length on page 27 of No. 8, and page 82 of No. 12 of R.P.M.I.

104 Tactical Exercises for the Battalion and Regiment, with Solutions (104 Gefechtsaufgaben für das Bataillon und Regiment sammt Lösungen.) By Major V. Hegyközszentimre, Austro-Hungarian Army. 170 pp., with 2 maps. 8vo. Vienna, 1910. Seidel & Son. 8/-.

The second edition of this book contains a series of tactical exercises of various kinds for a battalion and for a regiment, such as advanced and rear guard actions, infantry advance under distant artillery fire, attacks carried out under varying conditions, etc. Solutions are given to the problems discussed, and considerations of the various tactical situations are added in accordance with the latest Austrian regulations.

Technical Handbook for the Supply Service. (Technisches Handbuch für militärische Verpflegsorgane). By Militärunterintendant Tlapek. Austro-Hungarian Army. 420 pp., with several illustrations. 8vo. Vienna, 1910. Alfred Hölder, 8/6.

The second edition of this book is considerably amplified. It is divided into 10 sections, the first of which deals with general principles, the remaining sections being devoted to water, bread, meat, vegetables, groceries, tea and coffee, etc., fodder, bedding and lighting, and estimation of expenses.

Staff Rides. By Captain Marindin, the Black Watch. 104 pp. 12mo. London, 1910. Hugh Rees. 2/-.

This is the fifth edition of a useful little book, which is now well known in the service. The new edition was necessary in order to bring it into line with field service regulations. It is fairly complete, and should prove a great help to officers responsible for the direction of staff rides—or staff tours, as they are now called in Training and Manœuvre Regulations. The latter manual was not in existence when Captain Marindin first brought out his book.

The author may perhaps be criticised in that he lays so much stress on reconnaissance as the daily task of officers taking part in the tour, that he leaves the impression that no other form of outdoor instruction should be given. Training and Manœuvre Regulations, page 18, para. 4, lay down "The outdoor work during the first days of a staff tour will consist chiefly of reconnaissance, the next days when contact may be expected to have taken place will usually be devoted to tactical work on the ground," and, again, "Tactical problems should be set." Now, these tactical problems give scope for most valuable tactical instruction. If well arranged, they should promote interesting discussion, and the interchange of opinions should do much to develop the tactical ideas of the officers taking part. The neglect of this in favour of the rather monotonous succession of exercises in reconnaissance, recorded on page 29, and as shown by the suggested programme of work on page 16, forms a weak point in an otherwise valuable book.

The Defence of United South Africa as a Part of the British Empire. Lectures by Brig.-General G. G. Aston, C.C., with a Preface by General Lord Methuen. 63 pp. 16mo. London, 1910. Hugh Rees. 1/-

Under the above title are printed three lectures and an address by Brig.-General G. G. Aston, together with a preface by General Lord Methuen, General Officer Commanding-in-Chief, South Africa

In his preface, Lord Methuen says, "We do not expect, nor do we think it necessary, that the Colonial should compete with the trained soldier in a European army, all we ask is that he should be able to shoot, ride, know simple drills, his work in the field, and understand what discipline means."

With regard to the training of officers, Lord Methuen advocates the establishment of a military college in South Africa on the lines of the Royal Military College at Kingston, Canada.

Address at Pretoria Cadet prize-giving, 19th June, 1909.—In this, General Aston lays stress on the value of discipline, and gives advice on the subject of unselfishness, in which connection he recommends a study of the life of Stonewall Jackson.

Lecture to Transvaal University College on a proposed College for training South African officers, November, 1909.—The lecturer, referring to the committee which sat at Johannesburg in January, 1907, with Lord Selborne as president, says "the report would have been of the utmost value if a grave emergency had occurred, because it laid down the nature of the contingent which each Colony might provide, if so disposed, and a uniform organization and equipment was devised for each contingent. Much delay and correspondence would thus have been saved on the occurrence of an emergency requiring mutual support."

General Aston establishes his case for the necessity of well-trained officers, and points out that the military college at Kingston not only trains cadets to become good officers and useful men in civil life, but also assists in the higher education of officers of the active forces; the latter function General Aston thinks should be the first to receive attention in South Africa. In spite of the good arguments adduced by the lecturer in support of his view, many of which, by the way, seem to apply equally in the case of cadets, his contentions are not entirely convincing. Much useful detail about the Royal Military College course is given in the lecture.

Lecture to Natal Militia on the British Empire from a naval and military point of view, 20th October, 1908.—As this lecture was delivered before the establishment of the Union, it does not apply so much to South Africa under present conditions as it does to the Empire generally, concerning the integrity of which it supplies material for useful thought.

Lecture to Transvaal Volunteers on the British Empire from a strategical point of view, 5th December, 1908.—In this short lecture General Aston's chief endeavour, which he ably accomplishes, is to bring out the necessity for mobility and power of concentration in the case of our fleets and armies.

TRAVEL AND TOPOGRAPHICAL.

In Menelik's Kingdom. (Im Reiche Kaiser Meneliks.) By Freiherr von Kulmer. 236 pp., numerous illustrations. 8vo. Leipzig, 1910. Klinkhardt & Bierman. 6/-

This book is merely a record of the diary kept by Freiherr von Kulmer during his stay in Abyssinia in 1907-08. No extensive travels were made, the author having remained mostly in the neighbourhood of Harrar or Addis Abbaba. The book, however, is interesting enough as a record of personal experiences and current events in Abyssinia during the years noted, and some of the illustrations from photographs are quite worth looking at by anyone who may be particularly interested in the country.

Overland to India. By Sven Hedin. 2 vols. 758 pp., with 308 illustrations, 2 maps and an index. 8vo. London, 1910. Macmillan. 30/-.

This book describes Dr. Sven Hedin's overland route to India, whence he travelled to Tibet and discovered the Trans-Himalaya. The first volume opens at Batum, where the author arrived in October, 1905, when disorder and tumult reigned, and strikes were the order of the day. Leaving Batum, Dr. Sven Hedin went by boat to Trebizonde and at this point commenced his overland journey. His first objective was Tehran, and his route thither lay through Armenia *viâ* Ararat and Nchichevan, Julfa, Marand and Tabriz. It was after leaving Tehran that the most important part of the journey was entered upon. The general direction of the route was south-east except for the short march due north across the Kevir Desert, and due south again to rejoin his caravan. His account of the Kevir is particularly interesting.

After leaving the Kevir the journey lay through Tebbes, Naibend, Neh and Nasratabad (Seistan). At Tebbes he was fortunate enough to witness a passion play which was enacted during the "Moharram" festival.

In the second volume there are some interesting chapters on the journeys of Marco Polo and Alexander the Great, in which the country as it is to-day is compared with what it was in the times of the ancients. He arrived at Nasratabad while the plague was raging and he gives an interesting account of the steps taken by the British Consul and surgeon to prevent the spread of the pestilence. From Nasratabad, Dr. Sven Hedin continued his journey *via* Robat to Nushki and finally arrived in Quetta, having at last after eight months of caravan life arrived at the starting point of his journey of discovery in Tibet.

The Austro-Hungarian Officers in Macedonia, 1903, 1909. Die Oesterreichisch-Ungarische Offiziersmission in Makedonien.) By Captain (Major in the Ottoman service) Gustave Hubka. 154 pp., 71 illustrations and 6 maps. 4to. Vienna, 1910. F. Tempsky. 4/-.

This publication gives a record of the work done by the Austro-Hungarian officers employed with the Macedonian Gendarmerie during the period when the latter was organized and administered by foreign officers. As a result of what is known as the "Mürsteg" programme of 1903, the policing of Macedonia was entrusted to a number of officers from the various Powers, the province being divided into Austro-Hungarian, Russian, British, French, and Italian sectors, corresponding to the nationalities of the officers. This arrangement came to an end with the inauguration of constitutional government in Turkey, merely a small balance of foreign officers then continuing in the Turkish service for general work in the Gendarmerie throughout the Empire.

Private Letters of the Marquess of Dalhousie. Edited by J. G. A. Baird. 448 pp., with 11 portraits and an index. Edinburgh and London, 1910. Blackwood. 15/-.

The letters contained in the volume were written by Lord Dalhousie to Sir George Couper, Bart., his oldest friend. Written by one who came from soldier stock and who himself "dearly loved the sojers" to a soldier who had seen much campaigning, the letters cannot fail to interest the military reader. Moreover, the correspondence took place at a period of great military activity;

the Indian Empire was in course of building, and the history of the country at the time, as reflected in the Governor General's correspondence, was more of war and conquest than of peaceful administration. As actual chronicles of battles, marches and sieges the letters, it need hardly be mentioned perhaps, are merely excursive; it is in the light they throw upon the inner history of the events dealt with that their chief interest lies; and in this respect, if read aright, they contain many useful lessons for the soldier, for they enable him to obtain glimpses of the larger and broader administrative views of the statesman regarding the causes and conduct of war which, otherwise, the fighting man is somewhat prone to overlook.

The wars dealt with in the letters are the Second Sikh War, which terminated with Lord Gough's crowning victory of Guzerat, numerous expeditions against the tribes on the North-West frontier, and the Second Burmese War. The campaign in the Crimea is also touched upon, and it is interesting to note the close attention with which events in the Middle East were watched in India. The espousal of the cause of Islam by Great Britain was not lost upon the Mahomedans of the Indian Empire, and Lord Dalhousie lays particular stress upon the far-reaching results which a victorious termination to the campaign was bound to exercise amongst Indian Moslems.

Besides the problems of actual war with which the letters deal, there are many questions of military administration which are of interest; and a study of the decisions given by Lord Dalhousie bear eloquent testimony to his administrative genius and perspicacity. Some of the orders he issued roused considerable discontent and indignation at the time they were given, but they have since been vindicated by events, and are as applicable to-day as when he first placed them on record.

The publication of the private correspondence of a great public servant must inevitably reveal a good deal that, in nine cases out of ten, would be better forgotten, and the present letters are no exception in this respect. Time, however, has blunted the points of the weapons with which the great Pro-Consul and his official contempories were wont to lunge at each other; and the personalities with which the pages of the volume are filled do no more at this distance of time than throw into clearer relief the acts and words of the eminent men referred to in these pages.

The Pathan Borderland. By C. M. Euriquez, 21st Punjabis. 141 pp., with a map and index. 8vo. Calcutta, 1910. Thacker. 6/-.

An interesting little book, in which the author gives a good deal of useful general information concerning the frontier tribes who inhabit the districts adjacent to our Indian borderland, from Chitral to Dera Ismail Khan.

Historical Records of the Viceroy's Bodyguard. By Lieutenant V. C. P. Hodson, 10th D.C.O. Lancers. 403 pp., with 20 illustrations, 16 appendices, a glossary of terms and an index. London, 1910. Thacker. 31/6.

This is an interesting work which shows how, besides performing its ceremonial duties, the Viceroy's Bodyguard in the past has rendered useful service in the field.

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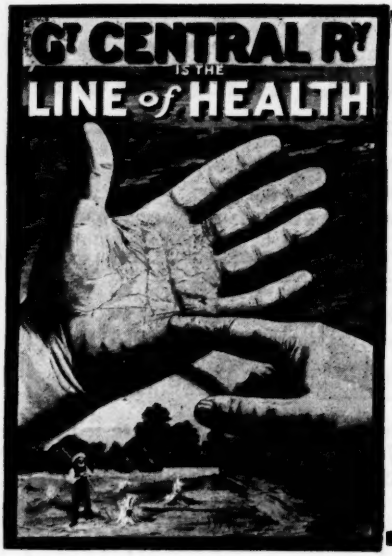

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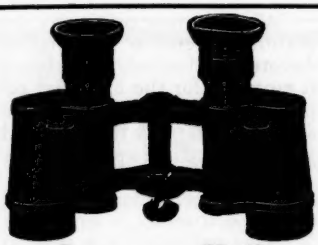

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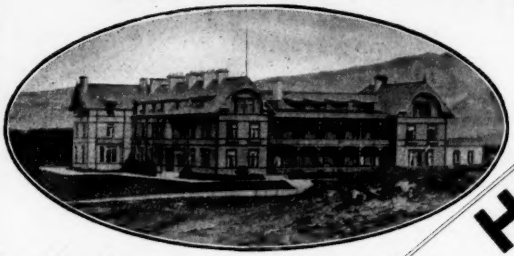

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